

## A Taxonomic Revision of *Prostanthera* Labill. Section *Prostanthera* (Labiatae). 1. The Species of the Northern Territory, South Australia and Western Australia

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### Abstract

Conn, Barry J. A Taxonomic Revision of *Prostanthera* Labill. Section *Prostanthera* (Labiatae) 1. The Species of the Northern Territory, South Australia and Western Australia. Nuytsia 6(3): 351-411 (1988). A taxonomic revision of the 21 species of *Prostanthera* section *Prostanthera* which occur in the Northern Territory, South Australia and Western Australia is presented. Two of these species also occur in the eastern states of Australia. Eight new species are described, namely, *P. albiflora*, *P. althoferi*, *P. ammophila*, *P. centralis*, *P. nanophylla*, *P. petrophila*, *P. splendens* and *P. verticillaris*. Two subspecies of *P. althoferi* (namely, ssp. *althoferi* and ssp. *longifolia*) are recognized. *P. baxteri* var. *sericea* is raised to specific rank (namely, *P. sericea*). Keys to the species and subspecies are provided. All recognized taxa are provided with full descriptions, distribution information (including maps), ecological and other relevant notes.

### Introduction

This is the second paper presenting the taxonomic conclusions of my investigations into the genus *Prostanthera*. The first paper (Conn 1984) presented a taxonomic account of *Prostanthera* section *Klanderia*. The taxonomic revision of *Prostanthera* section *Prostanthera* will be presented in two parts. This paper presents an account of the species which occur in the Northern Territory, South Australia and Western Australia. The second paper will deal with the species of eastern Australia (Queensland, New South Wales, Victoria and Tasmania). Although this represents an artificial division of the Section, only two species (namely, *P. spinosa* and *P. striatiflora*) occur in both geographical areas. A detailed discussion of the morphological features which characterize section *Prostanthera* will be presented in the account which deals with the species of this Section which occur in eastern Australia. Some information in Conn (1984) may clarify problems with respect to interpretation of morphology, even though that paper is primarily concerned with section *Klanderia*.

Detailed population studies are necessary in several of the species presented in this paper, so that the degree of variability within these species can be ascertained. This is particularly true for those species which are only known from one or a few collections. Furthermore, such field studies would assist in the elucidation of the relationship between species.

### Methods and Presentation

In general, usage of terms follows Lawrence (1955), Porter et al. (1973), and Stearn (1973). Terminology for plane shapes follows Ball et al. (1962). Author and literature abbreviations follow Stafleu & Cowan (1976, 1979, 1981, 1983, 1985).

In the descriptions, those character states which occur in one or a few specimens (hence, likely to occur in fewer than 10% of the individuals in the relevant taxon) are enclosed by parentheses. Parentheses are also used to enclose rarely occurring character states which may be present in an otherwise typical individual specimen. No distinction is made between these two situations.

The distribution of each taxon is briefly summarized after its description. The distribution summary and the citation of selected specimens examined are grouped according to various regional subdivisions. The subdivisions used for the States are: for New South Wales those of Jacobs & Pickard (1981) (which is modified from Anderson 1961), for Victoria those of Cochrane et al. (1968), for the Northern Territory those of Anonymous (1981), for South Australia those of Laut et al. (1977a, 1977b, 1977c, 1977d, 1977e, 1977f, 1977g), and for Western Australia those of Beard (1980). The conservation status of each taxon is provided (as stated by Conn, in Leigh et al. 1981) or using the formulae of Leigh et al. (1981).

The ecological notes are mostly taken from collector's notes on the labels of herbarium sheets. Common names are included where known.

Herbarium abbreviations are those given in Holmgren et al. (1981). Kings Park and Botanic Gardens (West Perth, Western Australia) is referred to as 'KP'. Collections from the following herbaria were examined: A, AD, ADW, B, BR, BRI, C, CANB, CBG, E, F, GH, GOET, HAL, HBG, HO, K, KP, L, LD, LE, LY, M, MEL, MO, NE, NSW, NT, NY, P, PERTH, S, SYD, UC, UPS, US, W, WRSL, WU.

### Key to Species

- 1a. Leaves whorled (Western Australia) .....1. *P. verticillaris*
- 1b. Leaves decussate
  - 2a. Branches with spines present
    - 3a. Calyx lobes very unequal; shrub glabrous except for a few hairs at distal nodes; branches  $\pm$  patent and distant (South Australia) 2. *P. nudula*
    - 3b. Calyx lobes  $\pm$  equal in length; shrub usually hairy; branches  $\pm$  erect and relatively crowded (New South Wales, Victoria, South Australia) .....3. *P. spinosa*
  - 2b. Branches not spiny
    - 4a. Leaf lamina with margin slightly undulate and  $\pm$  crenate; plant viscid (Western Australia) .....4. *P. eckersleyana*
    - 4b. Leaf lamina with margin  $\pm$  flat and entire, sometimes with an occasional tooth present
      - 5a. Leaf lamina strongly incurved or terete
        - 6a. Leaves terete (Northern Territory, South Australia, Western Australia) .....5. *P. sericea*
        - 6b. Leaves narrowly obovate, narrowly elliptic, narrowly ovate to linear
          - 7a. Leaf lamina length to width ratio 13.9-39; prophylls moderately to densely hairy; anthers not cristate; fruiting calyx enlarged; corolla with weak, loosely tangled hairs on inner surface (Western Australia) .....6. *P. campbellii*
          - 7b. Leaf lamina length to width ratio 2.5-13(-15); prophylls glabrous or with an occasional hair present; anthers cristate dorsally; fruiting calyx not or only slightly enlarged; corolla with erect to appressed,  $\pm$  straight hairs, not loosely tangled
            - 8a. Calyx with outer surface glabrous or with a few scattered hairs at base; prophylls 0.3-0.8(-1.2) mm long, 0.1-0.3(-0.4) mm wide, soon deciduous and/or undeveloped; corolla 6.5-10 mm long, lacking markings (Western Australia) .....7. *P. canaliculata*

- 8b. Calyx with outer surface densely hairy on adaxial surface, abaxial surface glabrous or with an occasional hair; prophylls 1-3.9 mm long, 0.2-0.7 mm wide, usually persistent; corolla 10.5-13 mm long, with mid-brown to dull orange spots in throat and on base of abaxial median lobe (Western Australia) .....8. *P. baxteri*
- 5b. Leaf lamina with most of its surface  $\pm$  flat; margin often slightly incurved or recurved
- 9a. Leaves moderately to densely hairy (*P. behriana* sometimes with hairs restricted to base of leaves and midrib of adaxial surface)
- 10a. Hairs of branches and leaves  $\pm$  appressed and antrorse (note: indumentum of *P. wilkieana* sometimes superficially appearing to be totally  $\pm$  appressed, but subappressed to patent hairs always present - refer lead 10b)
- 11a. Corolla 15-20 mm long; fruiting calyx not or only slightly enlarged, not becoming membranous as seeds mature; hairs of branches 0.3-0.4 mm long; leaves obovate to narrowly ovate (South Australia) .....10. *P. behriana*
- 11b. Corolla 6.5-15 mm long; fruiting calyx enlarged, becoming membranous as seeds mature; hairs of branches 0.5-0.7 mm long (*P. althoferi* has hairs 0.2-0.5 mm long; leaves narrowly obovate to linear)
- 12a. Prophylls 0.7-3.6 mm long, 0.1-0.4 mm wide; lamina narrowly obovate to linear; style 5-7 mm long; corolla white with mauve to purple striations on inner surface of tube and/or mouth and base of lobes (South Australia, Northern Territory, Western Australia) 9. *P. althoferi*
- 12b. Prophylls 3.8-8.1 mm long, 0.4-1.1 mm wide; lamina ovate to narrowly elliptic; style 7.2-7.6 mm long; corolla white basally, purple to mauve distally with yellow spots in throat and on base of abaxial median lobe (South Australia) .....11. *P. ammophila*
- 10b. Hairs of branches and leaves  $\pm$  patent or indumentum a mixture of appressed and patent hairs, then hairs retrorse to antrorse
- 13a. Indumentum consistently composed of patent hairs (Northern Territory, Western Australia).....12. *P. centralis*
- 13b. Indumentum a mixture of appressed, subappressed and patent hairs, hairs retrorse to antrorse
- 14a. Hairs of leaves  $\pm$  straight; shrub 0.3-1.2 m high; glands absent on outer surface of calyx lobes; hairs 0.2-2.1 mm long (Northern Territory, South Australia, Western Australia) .....13. *P. wilkieana*
- 14b. Hairs of leaves curled; shrub up to 0.3 m high; hairs 0.3-0.6 mm long; sparsely to moderately glandular on outer surface of calyx lobes (Western Australia) 14. *P. scutata*

- 9b. Leaves glabrous or with an occasional hair to very sparsely hairy (indumentum usually not obvious without magnification)
- 15a. Leaf lamina transversely elliptic or transversely ovate to transversely broad-elliptic or transversely broad-ovate, lamina length to width ratio 0.5-0.8 [3.5-6 mm long, 6-8 mm wide] (Western Australia) .....15. *P. splendens*
- 15b. Leaf lamina narrowly ovate to narrowly obovate, ovate to obovate, never transverse, lamina length to width ratio at least 1
- 16a. Calyx with adaxial lobe up to 4 mm long
- 17a. Leaves arranged along long axes and not clustered; lamina 8.5-26(-32) mm long
- 18a. Corolla 5-6 mm long; calyx with outer surface glabrous, except for an occasional hair at base; prophylls 0.5-0.8 mm long, 0.1-0.2 mm wide (Western Australia) .....16. *P. petrophila*
- 18b. Corolla 15-20 mm long; calyx sparsely to densely hairy on outer surface, at least on adaxial lobe; prophylls 1-6 mm long, 0.2-1 mm wide
- 19a. Corolla 15-20 mm long; leaf lamina (9.4-)14-26(-32) mm long; calyx adaxial lobe length to calyx abaxial lobe length ratio 1.5-2.1 .....10. *P. behriana*
- 19b. Corolla 10.5-13 mm long; leaf lamina 4.8-15 mm long; calyx adaxial lobe length to calyx abaxial lobe length ratio 0.3-0.8 .....8. *P. baxteri*
- 17b. Leaves clustered on short axes; lamina 1.3-4.6 mm long
- 20a. Calyx tube length to calyx abaxial lobe length ratio 1-1.5 [calyx tube 2.5-3 mm long, abaxial calyx lobe 1.7-3.1 mm long, adaxial calyx lobe 1.5-2.2 mm long]; corolla tube 6-7 mm long, abaxial median lobe 2.6-4.8 mm long, adaxial median lobe-pair 3-6 mm long (South Australia) .....17. *P. eurybioides*
- 20b. Calyx tube length to abaxial calyx lobe length ratio 0.4-0.5 [calyx tube 1.3-2.3 mm long, abaxial calyx lobe 3.2-4.6 mm long, adaxial calyx lobe 2.9-3.9]; corolla tube 7.4-10.1 mm long, abaxial median lobe 5.9-7.1 mm long, adaxial median lobe-pair 2.6-3.1 mm long (Western Australia) .....18. *P. nanophylla*
- 16b. Calyx with adaxial lobe 4.6-26 mm long
- 21a. Corolla tube 10.3-11.4 mm long; corolla white with purple striations and orange to yellow spots (yellow-orange lines often present also) on inner abaxial surface of tube; anthers inserted 3.3-3.7 mm above base of corolla (New South Wales, Northern Territory, South Australia, Western Australia) .....19. *P. striatiflora*
- 21b. Corolla tube 15-22 mm long; corolla pale mauve, pale blue to pink or white, with blue or dark purple spots on inner abaxial surface of tube, striations absent; anthers inserted 7.2-9.1 mm above base of corolla



- 22a. Calyx light green with outer surface hairy; adaxial calyx lobe 4.6-13 mm long; corolla white with pale blue spots in throat; anthers not cristate; prophylls 2.2-3.4 mm long (Western Australia) .....20. *P. albiflora*
- 22b. Calyx dark mauve to purple with outer surface glabrous; adaxial calyx lobe 15-26 mm long; corolla pale mauve, pale blue to pink with dark ?purple spots on inner surface of tube and on base of abaxial median lobe; anthers usually cristate; prophylls (4.5)-6-13 mm long (Western Australia) .....21. *P. magnifica*

### 1. *Prostanthera verticillaris* Conn, sp. nov. (Figure 3a)

Species nova Sectionis *Prostantherae*. *Frutices* circa 1.2 m. alti. *Rami* et *ramuli* plus minusve teretes, pilis moderatis usque densis vestita, argentei, pilis 0.5-0.9 mm longis, glandibus absentibus. *Folia* verticillata, basem versus pilis sparsissimis vestita; *petiolus* absens vel minus quam 1 mm longus; *lamina* ovata usque elliptica, 9.5-11 mm longa, 4-6 mm lata, basi acuta usque brevissima attenuata, margine integro, leviter recurvato, apice obtuso. *Pedicellus florum* circa 2 mm longus, pilis densis vestita, pilis 0.5-0.9 mm longis; *prophyllis* in dimidio distali pedicello affixis, anguste ovatis, 4.1-4.8 mm longis, 0.8-1 mm latis. Calyx probabiliter viridis; *tubus* circa 3.5 mm longus, extra pilis sparsis vestita, glandibus absentibus, interius glaber vel pilis sparsissimis vestita; *lobus abaxialis* ovatus, circa 2 mm longus, 2.5-2.7 mm latus, apice acuto, extra glaber vel pilis sparsissimis vestita, glandibus absentibus, interius pilis sparsis vestita; *lobus adaxialis* late ovatus, 4-4.5 mm longus, 3-4 mm latus, apice subacuto, extra glaber vel pilis sparsissimis vestita, glandibus absentibus, interius pilis sparsissimis vestita, glandibus absentibus. *Corolla* 9-12 mm longa, probabiliter alba, extra distaliter pilis moderatis usque densis vestita, glandibus absentibus, interius distaliter pilis sparsis usque moderatis vestita, glandibus absentibus; *lobus abaxiali-medianus* spatulatus, 5.3-6.8 mm longus, 3.6-5.5 mm latus, apice irregulari et rotundato, lobis lateralibus late ellipticis, 2.3-2.8 mm longis, circa 2.4 mm latis, apice leviter irregulari et rotundato, pari loborum adaxiali-mediano late ovato, circa 4 mm longo, circa 4 mm lato, apice leviter irregulari et rotundato, bilobata, sinu circa 1.2 mm longo. *Stamina* 3.5-4.4 mm e basi corollae affixa; filamenta 2.9-3.4 mm longa; antherae 1-1.2 mm longae, appendice 1.1-1.2 mm longa. *Pistillum* 8.3-8.5 mm longum; ovarium circa 1.3 mm longum, glabrum, glandibus absentibus; stylus circa 6.5 mm longus; lobis stigmatibus 0.2-0.4 mm longis. *Fructus* non visi.

*Typus*: *Newbey* 2710, 30.ix.1967, Warriup Hill, NE of Albany, Western Australia (holo: PERTH; iso: MEL 1547344).

Shrub c. 1.2 m high. *Branches* ± terete, moderately to densely hairy [80-85 hairs/mm<sup>2</sup>], silvery distally; hairs appressed to subpatent, antrorse, 0.5-0.9 mm long, white, glands absent. *Leaves* whorled, arranged in 3's or 4's, ?light to mid green; very sparsely hairy basally (including basal half of margin) [5-8 hairs/mm<sup>2</sup>], distally with an occasional hair or glabrous; hairs ± straight, subpatent, antrorse, 0.5-0.9 mm long; densely glandular [more than 200 glands/mm<sup>2</sup>]; *petiole* absent or less than 1 mm long; *lamina* ovate to elliptic, 9.5-11 × 4-6 mm [length to width ratio 1.8-2.4, length of maximum width from base to total lamina length ratio 0.4-0.6]; base acute to very shortly attenuate; margin entire, slightly recurved; apex obtuse; venation not visible, midrib faint, often indistinct distally. *Inflorescence* a frondose racemiform confluence, uniflorescence monadic; c. 6-8-flowered [per confluence]. *Pedicel* c. 2 mm long, densely hairy [80-86 hairs/mm<sup>2</sup>], glands absent; prophylls inserted on distal half of pedicel [ $a_1$  axis to anthopodium ratio c. 1.5-1.7], opposite, narrowly ovate, 4.1-4.8 mm long, 0.8-1 mm wide [length to width ratio 4.8-5.6, length of maximum width from base to total lamina length ratio 0.3-0.4], sparsely hairy [c. 10 hairs/mm<sup>2</sup>], base shortly attenuate, margin entire, apex acute. *Calyx* ?green; tube c. 3.5 mm long, outer surface sparsely

hairy [6-10 hairs/mm<sup>2</sup>], glands absent. inner surface glabrous or with an occasional hair at mouth, glands absent; *abaxial lobe* ovate, c. 2 mm long, 2.5-2.7 mm wide [length to width ratio 1.3-1.4], apex acute, outer surface glabrous or with an occasional hair, glands absent, inner surface sparsely hairy at base and along margin, glands absent; *adaxial lobe* broadly ovate, 4-4.5 mm long, 3-4 mm wide [length to width ratio 1-1.3], apex subacute, outer surface glabrous or with an occasional hair, glands absent, inner surface with an occasional hair, glands absent; [adaxial lobe length to abaxial lobe length ratio 2-2.3]. *Corolla* 9-12 mm long, probably white; outer surface glabrous on tube to base of lobes, moderately to densely hairy on lobes [30-117 hairs/mm<sup>2</sup>], glands absent; inner surface glabrous in tube, mouth sometimes sparsely hairy, lobes moderately hairy [(30-32 hairs/mm<sup>2</sup>), glands absent; *abaxial median lobe* spatulate, 5.3-6.8 mm long, 3.6-5.5 mm wide [length to width ratio c. 1-1.2], apex irregular and rounded; *lateral lobes* broadly elliptic, 2.3-2.8 mm long, c. 2.4 mm wide [length to width ratio 1-1.2], apex slightly irregular and rounded; *adaxial median lobe-pair* broadly ovate, c. 4 mm long, c. 4 mm wide [length to width ratio 1], apex slightly irregular and rounded, bilobed (sinus c. 1.2 mm long). *Stamens* inserted 3.5-4.4 mm above base of corolla; filaments 2.9-3.4 mm long, glabrous; anthers 1-1.2 mm long, cristate dorsally, connective extended to form a basal appendage 1.1-1.2 mm long, terminating in 3 or 4 narrowly triangular trichomes. *Disc* c. 0.3 mm high. *Pistil* 8.3-8.5 mm long; ovary ± cylindrical, c. 1.3 mm long, diameter at base 0.8 mm, lobes 0.1-0.2 mm long, glabrous, glands absent; *style* c. 6.5 mm long; *stigma lobes* 0.2-0.4 mm long. *Fruits* not seen.

*Specimen examined.* Only the Type collection known.

*Distribution.* Endemic to the South-West Botanical Province (Eyre District) of Western Australia. Figure 11.

*Ecology.* Occurs 'In granitic loam' (Newbey 2710).

*Notes.* The most distinctive feature of this species is the presence of whorled leaves. Its affinities are unknown.

*Conservation status.* Not known. Newbey (in litt., 1984) records that 'only a few plants were seen'. Risk Code = 1K.

2. ***Prostanthera nudula*** J.M. Black ex E.L. Robertson, Fl. S. Australia, 2nd edn, 4: 946, 736 & 737, fig. 1054 (1957); Althofer, Cradle of Incense 146, 147 & 149 (1978); Haegi, in J. Jessop (ed.), Fl. Central Austral. 310 (1981); Conn, in J. Jessop & H. Toelken (eds), Fl. S. Austral. 3: 1214, fig. 556D (1986). *Type:* Cleland s.n., -[10-15].-[iv].1950, Mt Woodroffe ['Everard Park' Station (Robertson, in Black 1965)], Everard Range, South Australia (holo: AD 95701006).

Small ± erect to scrambling shrub, 0.5-2 m high. *Branches* ± terete to angled, striate, glabrous except for a few unicellular and/or multicellular hairs which are often present at the base of each ultimate branch (hairs up to c. 0.06 mm long), sparsely to rarely moderately glandular [16-33(-83) glands/mm<sup>2</sup>], glands ± hemispherical; ultimate and penultimate branches becoming rigid and spinescent, often defoliated. *Leaves* glabrous, sparsely to moderately glandular [7-86 glands/mm<sup>2</sup>]; *petiole* 0.3-0.8 mm long; *lamina* narrowly elliptic, 3.9-10.5 × 1.3-2.2 mm [length to width ratio 3-5.3, length of maximum width from base to total lamina length ratio c. 0.5], base obtuse to subattenuate, margin entire, slightly incurved, apex obtuse; venation not visible or indistinct, midrib slightly raised on abaxial surface. *Inflorescence* a frondose racemiform confluence, uniflorescence monadic; 2-8-flowered [per confluence]. *Pedicel* 1.3-2.3 mm long, slender, glabrous or with an occasional multicellular hair, moderately to densely glandular [50-200 glands/mm<sup>2</sup>], glands hemispherical; *prophylls* inserted from approximately halfway up pedicel to near base of calyx [a, axis to anthopodium ratio 0.8-3], opposite, narrowly elliptic to narrowly obovate, 1.5-2.4 × 0.3-0.4 mm [length to width ratio 4.2-6.3, length of maximum width from base to total lamina length ratio 0.5-0.7], glabrous, moderately to densely glandular [33-100 glands/mm<sup>2</sup>], base attenuate, margin incurved, apex obtuse. *Calyx* yellow-green (Robertson in Black 1957), glabrous except for occasional hairs on margin of lobes (hairs c. 0.05 mm long); *tube* 2.5-3.4 mm long; *abaxial lobe* very broadly



Figure 1. a-d - *Prostanthera spinosa*. a - Twig and flowers. b - Open corolla. c - Calyx and gynoecium. d - Stamens, ventral and dorsal views. (Carrick 3121). e-f - *P. nudula*. e - Twig and flowers. f - Calyx. (Cleland s.n. - AD 96603709).

ovate, 3.3-4.7 mm long, 2.6-3.6 mm wide at base [length to width ratio 0.8-1.5], margin often slightly incurved (especially in bud), apex obtuse; *adaxial lobe* broadly ovate, 5.2-8 mm long, 3.5-5.2 mm wide at base [length to width ratio 1.1-1.9], margin slightly incurved (especially in bud), apex obtuse [adaxial lobe length to abaxial lobe length ratio 1.4-1.9]. *Corolla* 8-11 mm long, pale cream-coloured, basally white, inner surface of throat and base of abaxial median lobe with yellow dots, main veins of tube purple; outer surface moderately hairy on tube [50-100 hairs/mm<sup>2</sup>], hairs c. 0.1 mm long, sparsely glandular [16-33 glands/mm<sup>2</sup>]; inner surface with a few scattered hairs in throat, particularly at base of lateral lobes where moderately hairy [16-50 hairs/mm<sup>2</sup>]; *tube* 4.7-5 mm long, diameter at mouth 4-5 mm; *abaxial median lobe* very broadly ovate, 3-3.5 mm long, c. 4 mm wide at base [length to width ratio c. 0.8], margin slightly irregular and undulate, apex emarginate (sinus 0.5-0.6 mm long); *lateral lobes* oblong-triangular, c. 3 mm



long, c. 2 mm wide at base [length to width ratio c. 1.5], margin entire, apex obtuse; *ad-axial median lobe-pair* very broadly ovate, 4.2-4.5 mm long, c. 4.4 mm wide [length to width ratio c. 1], margin entire, apex bilobed; each half of lobe-pair very broadly ovate, 1.5-1.6 mm long, c. 2 mm wide at base [length to width ratio c. 0.8], apex obtuse. *Stamens* inserted c. 2.5 mm from base of corolla; filaments 2.3-3.3 mm long (adaxial and abaxial filaments respectively), glabrous; anthers 1-1.3 mm long, base of lobes with irregularly thickened acumen c. 0.2 mm long, connective extended to form a basal appendage 1.5-1.6 mm long, distal end of appendage with 1-3 triangular trichomes c. 0.1 mm long, or trichomes absent. *Disc* c. 0.8 mm high. *Pistil* c. 8 mm long; *ovary* 0.5-0.6 mm long, diameter at base c. 1 mm, distal and adaxial surfaces densely glandular [c. 167 glands/mm<sup>2</sup>], lobes c. 0.1 mm long; *style* 5.5-6 mm long, with an occasional gland basally; *stigma lobes* up to 0.3 mm long. *Fruiting calyx* slightly enlarged (abaxial lobe 4-5 mm long, 4-5 mm wide [length to width ratio 0.9-1.3]; adaxial lobe (7-)10-14 mm long, 7-10 mm wide [length to width ratio 1.1-1.6]); [adaxial lobe length to abaxial lobe length ratio 2-2.8]), becoming dry and hyaline. *Mericarps* 2-2.6 mm long, distally 1-1.3 mm extended beyond base of style, distal diameter c. 2.6 mm, distal and adaxial surfaces moderately glandular [33-67 glands/mm<sup>2</sup>]; *seeds* c. 1.6 mm long, c. 0.8 mm wide. Figure 1e-f.

*Selected specimens examined (17 examined).* SOUTH AUSTRALIA: Northern Arid: Western Sandplains (Illbillee - Everard Range): *Beaglehole* 10161, 24.vi.1965, Illbillee Well area (AD); *Beaglehole* 10184, 25.vi.1968, Betty Well area (AD, MEL); *Cleland* s.n., --[iv].1950 (AD - type); *Cleland* s.n., 1.ix.1954 [presumably 17.viii.1954], "Everard Park" (AD, MEL); *Cornwall* 181, 3.vi.1972, near "Everard Park" Homestead (AD, MEL); *Eichler* 17464, 12.ix.1963, near Victory Well (AD); *Eichler* 17587, 17.ix.1963, Betty Well (AD); *Evans* s.n., -i.1964, Betty Well (AD); *Helms* s.n., 1.vi.1891 (AD, MEL); *Forde* 904, -x.1957, "Everard Park" Homestead (CANB); *Joseland* s.n., 5.x.1963, near Ungulbullarina Rockhole (AD); *Lord* s.n., 13.iv.1950, Betty Well (MEL); *Rose* s.n. (NT 13654), 20.i.1968, near Victory Well (AD, MEL, NSW); *Symon* 3330, 17.ii.1965, near Mt Illbillee (CANB); *Whibley* 1209, 16.ix.1963, near Hartbreak [?Heartbreak] Well (AD).

*Distribution.* Endemic to the Everard Ranges of South Australia. Figure 12.

*Ecology.* Occurs amongst granite outcrops usually near watercourses. Once recorded as associated with *Acacia olgana* (Forde 904). Altitude 762 m (*Helms* s.n., 1.vi.1891). *Beaglehole* 10184 records that bushes partly eaten by stock.

*Typification.* The locality given on the holotype appears to refer to two different localities [namely Mt Woodroffe (in the Musgrave Range) and the Everard Range]. All notes and sketches accompanying the holotype are in J.M. Black's hand. In a separate folder (included with the holotype) are two fragmentary collections (in separate envelopes), one by 'E.E. Lord, April 1950' and the other by 'J.B. Cleland, Sept. [presumably August (see below)] 1954'. The information on both of these collections is in E.L. Robertson's hand (Robertson in litt. 1984). The sketches and notes referring to the second Cleland collection were done by Robertson. Material cultivated from this second collection were illustrated by C. Hill and are included in the folder. Unfortunately Cleland does not mention collecting this species of *Prostanthera* in his diaries (as held in the State Archives of South Australia). He did visit Mt Woodroffe ('Tues. April 18. 1950', Cleland's 1950 diary) and he refers to collecting at the summit. Before going to Mt Woodroffe, he visited Everard Park Station (together with E.E. Lord and others in the party). 'They arrived [at] 5 pm Mon. April 10 and remained there until Sat. April 15 [departing at 9.30 am]' (Robertson in litt. 1984). On the return trip, the party passed through the Everard Range and Everard Park on 'Sat. April 22' (Robertson in litt. 1984) with only a brief stop 'for a cup of tea' (Cleland's 1950 diary)

In 1954, Cleland stopped at Everard Park on 'Aug. 17. Lunch at Everard Park' (Cleland's 1954 diary) without mention of any collecting. On the return trip, before reaching Everard Park Homestead they 'got stuck' (Cleland's 1954 diary) in the sand of a rabbit warren to the west of the Homestead.

Robertson (in litt. 1984) believes that the correct locality of the holotype is 'Everard Park (Station), Everard Range', with Cleland collecting this species sometime between the 10th and 15th of April, 1950, before he visited Mt Woodroffe. Robertson (in litt. 1985) noted that Cleland's party had lunch 'at Betty's' [Betty Well] (Cleland's 1950 diary) on the 13th of April 1950, so it is conceivable that Cleland (hence the holotype), like *Lord* (MEL 43816), also collected there. She believes that Cleland's second collection is from the western side of the Everard Park Station and was made when the party was returning from a search of a rockhole near the Officer River in September 1954. Although it is not possible to obtain conclusive evidence, Robertson believes that the reference to Mt Woodroffe is incorrect. This error possibly occurred when J.M. Black labelled Cleland's collections from what he thought Cleland had told him. As yet, this species has not been recorded for Mt Woodroffe.

*Notes.* *P. nudula* is readily identified by the presence of rigid spinescent branches, the greatly unequal lengths of the calyx lobes [adaxial lobe length to abaxial lobe length ratio 1.4-1.9], and the cream-coloured corollas which have purple streaks on the tube. The only other species which has spines is *P. spinosa*. However, this latter species has more numerous shorter spines, calyx lobes which are less unequal in length [adaxial lobe length to abaxial lobe length ratio 0.8-1.5], and pale mauve, very pale lilac to almost white corollas which lack purple streaks.

*Conservation status.* Not known. Since this species has a very restricted distribution it is likely to be endangered or vulnerable (Risk Code = 2K [Conn, in] Leigh et al. 1981, pp. 49 & 86).

3. *Prostanthera spinosa* F. Muell., Defn Austral. Pl. 15 (June-July [Seberg 1986] 1855); Trans. Phil. Soc. Victoria 1:48 (Sept. 1855); J. Bot. Kew Gard. Misc. 8: 168 (1856); Pl. Victoria [vol. 2] Lithograms t. 56 (1865); Fragm. 6: 108 (1868); Benth., Fl. Austral. 5:99 (1870); F. Muell. Fragm. 9: 162 (1875); Intr. Bot. 110, fig. 51 (1877); Tate, Trans. & Proc. Roy. Soc. S. Austral. 3:78 (1880); op. cit. 6:165 (1883); Sullivan, S. Sci. Rec. 3:215 (1883); F. Muell. Key Vict. Pl. 2:42 (1886); op. cit. 1:386, fig. 107 (1887); Tepper, Bot. Centralbl. 36:374 (1888); Tate, Trans. & Proc. Roy. Soc. S. Austral. 12:65 & 111 (1889); Handb. Fl. Extratrop. S. Austral. 151 & 252 (1890); C. Moore, Handb. Fl. New S. Wales 351 (1893); Briq., in Engl. & Prantl. Nat. Pflanzenfam. 4, 3a: 220 (1895); Dixon, Pl. New S. Wales 231 (1906); Guilfoyle, Austral. Pl. 305 (1911); J.M. Black, Fl. S. Austral., 1st edn, 3: 492 (1926); Ewart, Fl. Victoria 985 (1930 [1931]); Jarman, Austral. Pl. Drawings 8: tt. 7 & 8 (1930); J.M. Black, Fl.S.Austral. 2nd edn, 4: 736, t. 1053 (1957); Galbraith, Wildfl. Victoria, 3rd edn, t. 139 (1967); Willis, Handb. Pl. Victoria, 2: 589 (1972 [1973]); Althofer, Cradle of Incense 146-149 (1978); Conn, in J. Jessop & H. Toelken (eds), Fl.S.Austral. 3: 1216 & 1217, fig. 556F (1986). *Lectotype* (here chosen): *F. Mueller* s.n., s. dat., 'Rocky declivities near springs of the Grampians', Victoria (lecto: MEL 43666; probable isolecto: *F. Mueller* s.n., s. dat., 'Grampians', Victoria - MEL 43662, MEL 43663, MEL 43664, MEL 43665).

Small ± erect shrub, sometimes scrambling and so semi-prostrate, or prostrate (*Foreman* 924), up to 0.5(-2) m high. *Branches* ± terete to quadrangular, when quadrangular often with two slightly raised lateral ridges, sparsely to densely hairy [up to c. 120 hairs/mm<sup>2</sup>], or glabrous except for a few hairs at nodes; hairs appressed to patent, antrorse to retrorse, ± white to translucent, 0.2-0.6(-1) mm long, hairs usually long (c. 1 mm long) on young branches; sparsely glandular [up to c. 20 glands/mm<sup>2</sup>], glands ± hemispherical; spines formed from reduced branches, 6-14 mm long, shortly tomentose basally, minutely tomentose or glabrous distally, or glabrous throughout, spines with 2-4 basal leaves. *Leaves* densely hairy or with scattered hairs, particularly on petiole, lamina margin and midrib of abaxial surface; *petiole* 0.4-1 mm long; *lamina* narrowly ovate to broadly elliptic, 1.5-6 × 1-4 mm [length to width ratio (1-)-1.3-3(-4.6), length of maximum width from base to total lamina length ratio 0.3-0.5], base acute to subobtuse, margin entire and slightly recurved, apex obtuse; venation indistinct, midrib raised on abaxial surface. *Inflorescence* a frondose racemiform confluence, uniflorescence monadic; 2- c. 14-flowered [per confluence]. *Pedicel* 1.5-8(-15) mm long, slender,



glabrous, sometimes with a few scattered minute hairs, especially near base of calyx (hairs up to 0.2 mm long) or densely hairy (hairs up to 2 mm long) [up to c. 100 hair/mm<sup>2</sup>]; sparsely glandular [up to c. 15 glands/mm<sup>2</sup>], or glands absent; *prophylls* usually inserted on distal half of pedicel [a<sub>1</sub> axis to anthopodium ratio (0.5-)-1- c. 8], when inserted at base of calyx then overlapping basal part of calyx, opposite to alternate, narrowly ovate to narrowly obovate, 0.9-2.5 mm long, 0.2-0.3 mm wide [length to width ratio 3.5-6, length of maximum width from base to total lamina length ratio 0.3-0.7], glabrous or with an occasional hair on margin and abaxial surface, or densely hairy on abaxial surface, hairs up to c. 0.5 mm long, base subattenuate, margin often slightly recurved, apex obtuse. *Calyx* green with maroon-brown tinge basally, adaxial lobe maroon-brown or green; outer surface moderately hairy [40-64 hairs/mm<sup>2</sup>], or with scattered hairs, hairs 0.1-0.3 mm long, or sometimes glabrous except for an occasional hair on margin, sparsely to moderately glandular [10-15 glands/mm<sup>2</sup>]; inner surface glabrous or with an occasional hair, or minutely hairy on distal 0.3-0.6 mm of lobes, hairs c. 0.1-(0.2) mm long, hemispherical glands absent, scattered pedicellate glands sometimes present; *tube* 2-3 mm long; *abaxial lobe* very broadly ovate to subcircular, 1.5-2.4(-2.8) mm long, (1-)2-3.5 mm wide [length to width ratio 0.6-1], apex broadly rounded, sometimes slightly retuse (sinus up to c. 0.2 mm long) to irregular; *adaxial lobe* depressed to very broadly angular-ovate, 1.5-3 mm long, (1-)2-4(-5) mm wide [length to width ratio 0.4-1], apex obtuse, rarely slightly retuse (sinus up to c. 0.1 mm long), [adaxial lobe length to abaxial lobe length ratio 0.8-1.5]. *Corolla* 8-14 mm long, pale mauve, very pale lilac to almost white, base of tube and abaxial surface of tube ± white, inner surface of tube usually with (2-)4-5 orange to orange-brown lines, or with 3 or 4 lines of orange to orange-brown dots medially on abaxial surface of throat, laterally with pink flecks, abaxial lobes often with very small pink flecks; outer surface glabrous basally, with a few scattered hairs distally or moderately (rarely densely) hairy distally [up to 40(-250) hairs/mm<sup>2</sup>], hairs 0.3-0.5 mm long, or glabrous throughout; inner surface glabrous basally, sparsely to moderately hairy in mouth and basal part of lobes [17-40(-60) hairs/mm<sup>2</sup>], hairs 0.3-1.1 mm long; *tube* 4-10 mm long, diameter at mouth 4-5 mm; *abaxial median lobe* subspathulate to very broadly angular-obovate, (1.5)3-5.5(-7) mm long, 2.6-8.5 mm wide (2-3 mm wide at base) [length to width ratio 0.5-1], apex ± irregular, emarginate (sinus up to 1.6 mm long); lateral lobes sub-circular to obovate, 2.2-5.6 mm long, c. 2-4(-5) mm wide [length to width ratio 0.9-1.9], apex obtuse, ± irregular, sometimes slightly emarginate (sinus up to c. 0.5 mm long); *adaxial median lobe-pair* depressed ovate, 1.2-4.2 mm long, 4.8-8 mm wide [length to width ratio 0.3-0.5], apex rounded, deeply bilobed (sinus up to 1.2 mm long), each half of lobe-pair ovate to depressed ovate [length to width ratio 0.7-1.4] and each with an obtuse apex. *Stamens* inserted 3-4 mm above base of corolla; filaments (1.7-)-2-4 mm long, glabrous; anthers 0.8-1.6 mm long, base of lobes with minute acumen less than 0.1 mm long, connective usually cristate (triangular trichomes up to c. 0.1 mm long), sometimes ± smooth, extended to form a basal appendage 0.7-2.1 mm long, distal end of appendage with (3-)-6- c. 12 triangular trichomes (trichomes 0.1-0.3 mm long). *Disc* 0.4-0.6 mm high. *Pistil* 6-8 mm long; *ovary* 0.5-1.6 mm long; *style* c. 5-6.5 mm long; *stigma lobes* 0.2-0.4 mm long. *Fruiting calyx* unchanged. *Mericarps* 2-2.5 mm long, distally c. 1 mm extended beyond base of style; seeds ± flattened to slightly concave, ± elliptic, c. 1.5 mm long, c. 0.7 mm wide. Figure 1a-d.

*Selected specimens examined* (160 examined). NEW SOUTH WALES: North Coast: Clark, Pickard & Coveny 1871, 30.vii.1969, 8 miles SSE of Coaldale (AD); Foreman 924, 23.viii.1985, Rocky Creek, on Coaldale road (MEL, NSW).

VICTORIA: South West: Beaglehole 29616, 19.xi.1968, Mt Arapiles (AD, MEL); Willis & Beaglehole s.n., 11.xii.1966, source of Glenelg River, at Strachan's Crossing, the Grampians (MEL).

SOUTH AUSTRALIA: Murray Mallee: Northern Calcarenite Ridges and Plains (Pendleton); Woods s.n., s. dat., Tattiarra Country (MEL 43651). - Mt Lofty Block: (Kangaroo Island) (Gantheaume): Coles 23, 14.i.1965, Stunsail Boom River (AD); (Pardana): B. & H. Conn 1099, 16.xi.1980, Breakneck River (AD, HO, MEL, NSW); (Stokes Bay): B. & H. Conn 1098, 14.xi.1980, Middle River Dam (AD, BRI, CANB, MEL); (Cygnet): Waterhouse s.n., s. dat. Cygnet [Nepean] Bay (MEL 43647). - Flinders

Ranges: Southern Basins and Ranges (Wilpena): *Hill* 353, 25.x.1955, Wilpena Pound (AD); *Orchard* 2597, 7.xi.1970, between Madge's Hill and Edeowie Gorge, Wilpena Pound (AD). - Eyre and Yorke Peninsulas [Eyre Peninsula]: Southern Highlands and Plains (Mt Gawler): *Browne* s.n. (? 38), s. dat. Port Lincoln (MEL 43650); (Edillie): *Alcock* C52, 29.viii.1964, near Wanilla (AD); (Marble Range): *Whibley* 1866, 25.viii.1967, SE end of Marble Range (AD).

*Distribution.* New South Wales - North Coast; Victoria - South West; South Australia - Murray Mallee, Mt Lofty Block (Kangaroo Island), Southern Highlands and Plains (Eyre Peninsula), and Flinders Ranges. Figure 12.

*Ecology.* Commonly occurring in rocky areas and watercourses in association with mallee, *Eucalyptus camaldulensis*, *E. baxteri*, *E. leucoxydon*, *Allocasuarina verticillata* and *Callitris rhomboidea* communities. Associated understorey species include *Acacia mearnsii*, *A. retinodes*, *A. ruppii*, *Bauera sessilifolia*, *Caladenia caerulea*, *Correa* spp., *Daviesia* spp., *Gahnia sieberiana*, *Hibbertia* spp., *Isopogon* spp., *Logania* spp., *Petrophile pulchella*, *Pultenaea* spp., *Thryptomene calycina* and *Xanthorrhoea*. Soils usually sandy to sandy-loam, overlying sandstone or limestone. Ironstone gravel sometimes present. Once recorded growing in soils with high clay content.

*Typification.* Mueller does not cite any specimens for this species in the protologue (Mueller 1855a). The locality is cited as 'On springs and irrigated rocks in the Grampians' (Mueller 1855a, p. 48). At MEL there are five collections by Mueller from the Grampians (namely MEL 43662-43666). MEL 43666 has more precise locality details (namely 'Rocky declivities near springs of the Grampians') than the other specimens which merely state that they were collected from the 'Grampians'. Since MEL 43666 closely agrees with the protologue it is here chosen as the lectotype and the other specimens are regarded as probable isolectotypes.

Seberg (1986) suggests that Mueller (1855a) was published in June-July 1855 and so should be regarded as a preprint of Mueller (1855b) which was published in September.

*Notes.* This species is readily identified by the presence of numerous spines which are formed from reduced branches (refer 'Notes' for *P. nudula* for comparison between these two species).

The distribution of this species is fragmented into more or less isolated populations which have attained considerable homogeneity and, in several instances, represent recognizable local variants. Although these variants are not formally recognized, the main features of each are discussed below:

1. 'The Grampians' variant (including the type) - Victoria: sparsely to moderately hairy on the branches; sparsely hairy on the outer surface of the calyx, pedicels and leaves; the prophylls and the inner surface of the calyx glabrous. This variant tends to have very long pedicels [5-14(-15) mm long].

2. The 'Mt Arapiles' variant - Victoria: similar to 'The Grampians' variant from which it differs by being densely hairy (hirsute) throughout (except inner surface of calyx glabrous), with pedicels only 1-3 mm long. One collection (*Wood* s.n.) from Tattiarra Country (South Australia) is identical to this variant.

3. The 'Kangaroo Island and Eyre Peninsula' variant - South Australia: very similar to 'The Grampians' variant, except that the indumentum is shorter and most parts have occasional hairs present. The inner surface of the calyx is glabrous and the pedicels are 5-8(-10) mm long.

4. 'The Flinders Ranges' variant - South Australia: sparsely hairy throughout, except that the inner surface of the calyx is glabrous. This variant is intermediate between 'The Grampians' and the 'Kangaroo Island and Eyre Peninsula' variants. The pedicels of this variant are short (2.5-3 mm long).

5. The 'Coaldale' variant - New South Wales: glabrous or scattered hairs may be present on most parts. The outer surface of the calyx is densely hairy and the inner surface is minutely hairy near margin. The branches usually are hairy at the nodes. This variant has a narrowly ovate leaf lamina (length to width ratio 3), whereas the previous variants have suborbicular to ovate leaf lamina (length to width ratio 1.1-2). The pedicels are (4-) 5-7 mm long. This variant is superficially similar to *Prostanthera nudula* (South Australia), however this latter species has unequal calyx lobes, a corolla which is white with purple streaks, and fewer spines (note: this variant has fewer spines than found in the other variants of *P. spinosa*).

*Conservation status.* Not considered to be endangered.

*Common names.* Spiny mint-bush (Ewart 1931, p. 985; Willis 1973, p. 589), Prickly Mint-Bush (Guilfoyle 1910, p. 305).

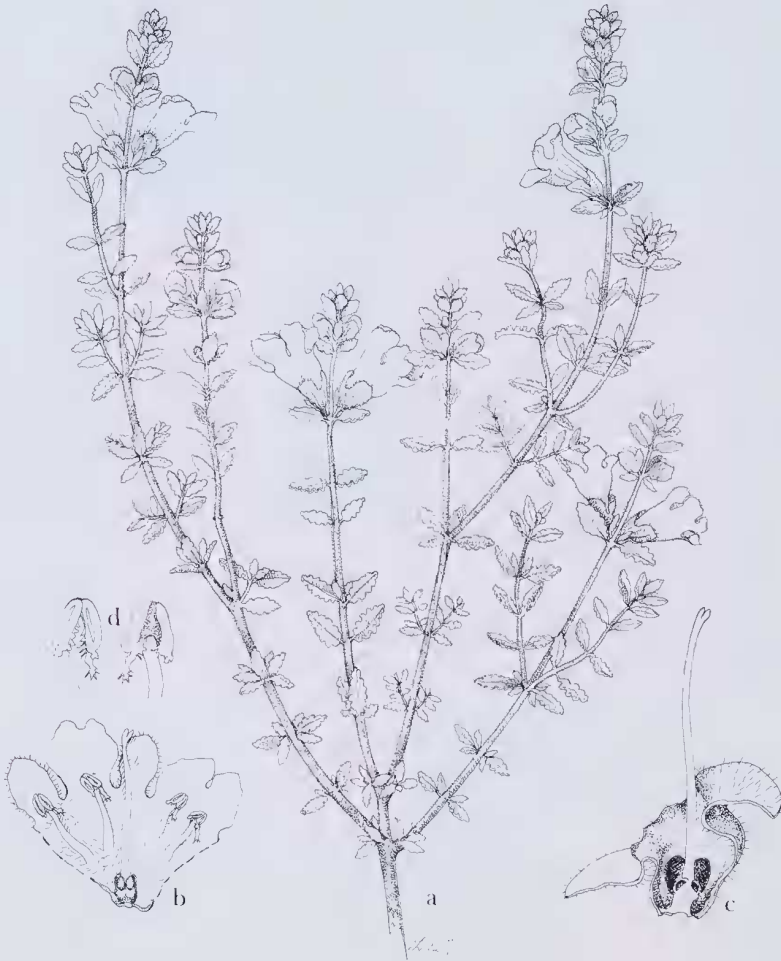


Figure 2. a-d - *Prostanthera eckersleyana*. a - Twig and flowers. b - Open corolla. c - Dissected calyx showing section of gynoecium. d - Stamens, ventral and dorsal views. (Ashby 3608).



4. *Prostanthera eckersleyana* F. Muell., *Fragm.* 10: 17 (1876); Briq., in Engl. & Prantl, *Nat. Pflanzenfam.* 4, 3a: 220 (1895); C.A. Gardner, *Enum. Pl. Austral. Occid.* 114 (1931); Blackall & Grieve, *W. Austral. Wildfl.* 3: 594 (1965); J.S. Beard, *Descr. Cat. W. Austral. Pl.* 94 (s. dat. [Oct. 1965]); Althofer, *Cradle of Incense* 154, 159 & 160 (1978); Grieve (ed.), Blackall & Grieve, *W. Austral. Wildfl.* W3B: 454 (1981); C.A. Gardner, *Wildfl. W. Austral.* 14th edn 122 (1981); Erickson et al., *Flowers & Pl. W. Austral.* 138 (1973). *Type*: *Young* s.n., s. dat., 'near Mt Churchman', Western Australia (holo: MEL 43140).

Erect, often spreading shrub, 0.2-1 m high. *Branches* terete, often slightly ridged to subquadrangular, viscid; moderately hairy [40-75 hairs/mm<sup>2</sup>], indumentum denser on internodal surface from within the axil of each leaf to the next more distal node (between bases of leaves); hairs subpatent and curved to curled, usually retrorse (an occasional hair antrorse), sometimes straight and  $\pm$  patent, 0.1-0.4(-0.8) mm long, sometimes up to 1.8 mm long on new seasons growth (indumentum  $\pm$  villose with patent hairs), white, multicelled; moderately to densely glandular [58- c. 100 glands/mm<sup>2</sup>], glands pedicellate (c. 0.3-0.8 mm long) or sessile. *Leaves* mid-green, viscid, aromatic; *petiole* (0.5-1.0-1.5(-2) mm long, slightly expanded distally, glabrous or with an occasional hair to moderately hairy [up to c. 50 hairs/mm<sup>2</sup>]; hairs c. 0.2 mm long; very sparsely to densely glandular, or glands absent; *lamina* very broadly angular-ovate to ovate, elliptic or oblong-elliptic, (4-)7-10  $\times$  (2-)3.4-8.5 mm [length to width ratio 1.1-1.9, length of maximum width from base to total lamina length ratio 0.2-0.4]; often incurved to conduplicate; base acute to truncate or very shortly attenuate; margin slightly undulate,  $\pm$  crenate (often irregularly so), lobes  $\pm$  obliquely triangular [up to c. 0.5(-1.5) mm long], antrorse with each lobe obtuse to rounded; apex obtuse; venation faint and often raised on abaxial surface, indistinct on adaxial surface, midrib raised on abaxial surface and slightly sunken to indistinct on adaxial surface; very sparsely to moderately hairy basally, denser on adaxial surface, or with scattered hairs particularly along margin and/or lobes of margin [up to c. 40 hairs/mm<sup>2</sup>]; hairs  $\pm$  straight, c. 0.3 mm long; sparsely to densely glandular (individual glands not distinguishable) [c. 23 to more than 100 glands/mm<sup>2</sup>], glands usually sessile, rarely mostly pedicellate (*Gardner* 12031). *Inflorescence* a frondose racemiform conflourescence, uniflorescence monadic; 4-10-flowered [per conflourescence]. *Pedicel* 1.5-3.5 mm long, moderately to densely hairy [68-119 hairs/mm<sup>2</sup>], hairs 0.2-0.4 mm long, moderately glandular [25-33 glands/mm<sup>2</sup>]; *prophylls* inserted on distal half of pedicel, often near base of calyx [a, axis to anthopodium ratio 1.8-18.3], opposite, oblong-elliptic or elliptic, (3-)5-8 mm long, (1-)2-3 mm wide [length to width ratio 1.6-2.6(-3)], length of maximum width from base to total lamina length 0.4-0.5], sparsely to moderately hairy basally, along midrib and along margin [up to c. 100 hairs/mm<sup>2</sup>], sparsely to moderately glandular (both pedicellate and sessile glands present) [up to c. 30 glands/mm<sup>2</sup>], base acute to subattenuate, margin entire or slightly lobed (lobes up to c. 0.6 mm long), apex obtuse. *Calyx* green with maroon to purple tinge distally; outer surface very sparsely to moderately hairy [up to c. 55 hairs/mm<sup>2</sup>], sometimes tube glabrous, moderately glandular (both sessile and pedicellate glands present) [40-58 glands/mm<sup>2</sup>]; inner surface glabrous in tube, except mouth and lobes which are sparsely to densely hairy [up to c. 150 hairs/mm<sup>2</sup>], moderately glandular (glands mostly pedicellate) [c. 50 glands/mm<sup>2</sup>]; *tube* 4.5-5.5 mm long; *abaxial lobe* very broadly oblong-ovate to broadly oblong or broadly ovate, 3.3-4.5(-5.4) mm long, 3.8-5.2 mm wide [length to width ratio 0.7-1], apex rounded, often emarginate (sinus c. 0.3 mm long); *adaxial lobe* depressed ovate to very broadly ovate, 3-5(-6.4) mm long, 5.6-7.9 mm wide [length to width ratio 0.4-0.9], apex rounded to  $\pm$  obtuse, becoming recurved: [adaxial lobe length to abaxial lobe length ratio 1.1-2.5]. *Corolla* 15-24 mm long, blue, mauve to purple or violet, once recorded as yellow (*Demarz* D. 2756 - may refer to calyx), often with maroon spots on inner abaxial surface of tube; outer surface glabrous or with a few scattered hairs to very sparsely hairy [c. 5 hairs/mm<sup>2</sup>], sparsely to moderately glandular [20-33 glands/mm<sup>2</sup>], glands pedicellate (up to 0.3 mm long); inner surface very sparsely hairy abaxially [8- c. 17 hairs/mm<sup>2</sup>], hairs weak, crinkled, 0.3-1.5(-2) mm long, remaining inner surface glabrous, glands absent; tube 14-18 mm long, diameter at mouth 6-7 mm; *abaxial median lobe*  $\pm$  spatulate to very broadly obovate, 8-9.8 mm long, 9.2-10 mm wide [length to width ratio 0.9-1],

apex slightly irregular and rounded, often broadly retuse (sinus up to c. 0.5 mm long); lateral lobes very broadly ovate or broadly oblong, 3.5-6.2 mm long, 2.9-6.5 mm wide [length to width ratio 0.9-1.2], apex obtuse to rounded; adaxial median lobe-pair depressed ovate, 5-7.2 mm long, 10-13 mm wide [length to width ratio 0.5-0.6], apex rounded, deeply bilobed (sinus 2.5-5 mm long). Stamens inserted 5.5-8 mm above base of corolla; filaments 3.2-7 mm long; anthers 1-1.6 mm long, base of lobes with acumen c. 0.2 mm long, dorsally often cristate, connective extended to form a basal appendage 0.5-0.9 mm long, terminating in 1-4 narrowly triangular trichomes. Disc 0.5-0.8 mm high. Pistil 12-24 mm long; ovary  $\pm$  cylindrical-obovoid, 1-1.5 mm long, diameter at base c. 1 mm, lobes c. 0.1 mm long, glabrous, glands absent; style 9-14 mm long; stigma lobes 0.2-0.4 mm long. Fruiting calyx slightly enlarged (abaxial lobe 4.6-6.2 mm long, 3.1-7.2 mm wide [length to width ratio 0.9-1.5]; adaxial lobe 6.2-10.1 mm long, 6.5-8.7 mm wide [length to width ratio 1-1.2]); [adaxial lobe length to abaxial lobe length ratio 0.7-1.3]. Mericarps c. 2 mm long, distally c. 1.5 mm extended beyond base of style, distal diameter 3-3.8 mm, glabrous, glands absent; seeds  $\pm$  obovoid, c. 2.2 mm long, c. 1 mm wide.

*Selected specimens examined (30 examined).* WESTERN AUSTRALIA: Eremaean (Austin): Gardner 12031, 5.xii.1958, Lake Mongers, Wanarra (PERTH); (Coolgardie): Foreman 683, 12.ix.1984, on road to Bimbijy Station, c. 45 km N of Beacon to Kulja Road (CBG, K, MEL, NSW, PERTH); Weber 5193, 5194, 19.x.1975, c. 20 km SE of Mouroubra Homestead (AD, MEL). - South-West (Avon): Ashby 3608, 7.ix.1970, North Beacon (AD); Blackall 3314, 6.x.1937, 13 km N of Bencubbin (PERTH); Conn 2217, 18.ix.1985, c. 5 km N of Kirwan (MEL, PERTH); Smith 119, 19.ix.1982, 2.8 miles N of Kirwan (MEL); Weber 5205, 19.x.1975, c. 40 km NE of Cleary (AD, MEL).

*Distribution.* Endemic to the Eremaean Botanical Province (Austin & Coolgardie Districts) and South-West Botanical Province (Avon District) of Western Australia.

*Ecology.* Occurs in clayey laterite derived gravelly soils, commonly associated with *Melaleuca* and *Acacia* species. It also has been collected from areas with sandy soils.

*Notes.* *P. eckersleyana* is readily identified by its viscid habit and by its undulate and crenate leaves. The affinities of this species are not known.

*Conservation status.* Does not appear to be threatened or endangered, but sometimes recorded as locally uncommon (Conn 2216, Foreman 683).

*Common name.* Crinkly mintbush (Erickson et al. 1973, p.138; Grieve, in Blackall & Grieve 1981, p. 454).

5. ***Prostanthera sericea*** (J.M. Black) Conn, stat nov. — *Prostanthera baxteri* A. Cunn. ex Benth. var. *sericea* J.M. Black, Fl. S. Austral. 3: 491 (1926); op. cit. 2nd edn 4: 737 (1957); Chippend. Trans. & Proc. Roy. Soc. S. Austral. 82: 335 (1959); Eichler, Suppl. to Black's Fl. S. Austral. 269 (1965); Blackall & Grieve, W. Austral. Wildfl. 3: 592 (1965); Althofer, Cradle of Incense 154 & 162 (1978); Haegi, in J. Jessop (ed.), Fl. Central Austral. 310 (1981); Conn, in J. Jessop & H. Toelken (eds), Fl. S. Austral. 3: 1211, fig. 555E. *Type:* Ramsay s.n., 14.vii.1891, 70 miles SW from Camp 17 at Mt Watson, Birksgate Range (Northern Arid), South Australia (holo: AD 98223526; iso: AD 97351280, MEL 42967, NSW 128286-128288).

Erect shrub, 1-1.5 m high, sometimes a small tree up to 4 m high. Branches  $\pm$  terete, usually grooved, moderately to densely hairy [83-230 hairs/mm<sup>2</sup>], appearing silver-green or grey-green; hairs  $\pm$  straight, appressed, antrorse, 0.2-0.3 mm long, white or grey-green; glands absent. Leaves green to silver-green or grey-green, moderately to densely hairy [75-225 hairs/mm<sup>2</sup>], hairs  $\pm$  straight, appressed, antrorse, sparsely glandular or glands absent; petiole absent; lamina linear, terete or with a faint groove along adaxial surface, strongly incurved and/or deeply grooved along adaxial surface, or  $\pm$  flat, 10-53  $\times$  0.4-3.4 mm [lamina length to width ratio 10.4-75.7(-83)], length of maximum width from base to total lamina length ratio 0.2-0.8], base attenuate, margin entire, apex attenuate to obtuse; venation (including midrib) not visible. Inflorescence a



frondose racemiform conflorescence, uniflorescence monadic, often with 1-3 accessory buds (one of these accessory buds frequently remaining rudimentary); 4-14-flowered [per conflorescence]. *Pedice* 1.5-3(-3.7) mm long, densely hairy [141-258 hairs/mm<sup>2</sup>], hairs 0.2-0.3 mm long, glands absent; *prophylls* inserted on central to distal half of pedicel [a, axis to anthopodium ratio 0.5-3.3], opposite,  $\pm$  linear to narrowly oblong, rarely narrowly elliptic, 0.6-2.3(-2.6) mm long, 0.1-0.4 mm wide [length to width ratio (2.8-)-5-15.3, length of maximum width from base to total lamina length ratio c. 0.1-0.5], densely hairy (as for leaves), base attenuate, margin entire, apex attenuate. *Calyx* cream; *tube* 1.7-3.5 mm long, outer surface moderately to densely hairy [83-175 hairs/mm<sup>2</sup>], glands absent, inner surface glabrous; *abaxial lobe* depressed ovate to very broadly ovate, 1.2-2.8(-3) mm long, 1.6-5.2 mm wide [length to width ratio 0.5-1], apex rounded, often slightly undulate, sometimes retuse (sinus up to c. 0.2 mm long), outer surface moderately to densely hairy [67-167(-200) hairs/mm<sup>2</sup>], inner surface moderately to densely hairy [70-133 hairs/mm<sup>2</sup>]; *adaxial lobe* depressed triangular to broadly ovate, 2.1-5.4 mm long, 2.8-6.4 mm wide [length to width ratio 0.6-1.4], apex obtuse to rounded, outer surface sparsely to densely hairy [21-150 hairs/mm<sup>2</sup>], glands absent, inner surface sparsely hairy [c. 30 hairs/mm<sup>2</sup>]; [adaxial lobe length to abaxial lobe length ratio 1.4-2.7]. *Corolla* 7-10 mm long, white with mauve or purple streaks on inner distal part of tube and inner abaxial surface of mouth, outer and inner surfaces sparsely hairy [18-45 hairs/mm<sup>2</sup>]; *tube* 3.5-5.7 mm long, diameter at mouth c. 4.5 mm; *abaxial median lobe* spatulate, 3-5 mm long, 2-3.8 mm wide [length to width ratio 0.9-2.1], apex slightly irregular and rounded; *lateral lobes* very broadly ovate to ovate, 2-4.3 mm long, 1.5-2.7 mm wide [length to width ratio 1-2.3], apex obtuse to rounded; *adaxial median lobe-pair* depressed obovate to broadly obovate, 1.3-5.5 mm long, 4-6.3 mm wide [length to width ratio 0.3-1.1], apex irregular and rounded, bilobed (sinus 0.7-2.5 mm long). *Stamens* inserted 1-2.4 mm above base of corolla; filaments 2.2-4 mm long, glabrous; anthers 0.6-1.5 mm long, connective extended to form a basal appendage 0.4-1 mm long, distally tapering into a narrowly triangular trichome. *Disc* c. 0.4-0.5 mm high. *Pistil* 5-8 mm long; *ovary* cylindrical-obovoid, 0.3-0.6 mm long, diameter at base c. 0.5-0.7 mm, lobes c. 0.1 mm long, sparsely to moderately glandular distally, sometimes nonglandular hairs also present; *style* 4.5-7 mm long; *stigma lobes* c. 0.4-0.6 mm long. *Fruiting calyx* enlarged (abaxial lobe 2-4 mm long, 2.7-6.4 mm wide [length to width ratio 0.6-0.9]; adaxial lobe 4.7-13 mm long, 4-9 mm wide [length to width ratio 0.9-2.2]); [adaxial lobe length to abaxial lobe length ratio 2-3.3]. *Mericarps* 1-1.5 mm long, distally 0.4-0.5 mm extended beyond base of style, distal diameter 1.8-2 mm, distal and adaxial surfaces moderately glandular [33-68 glands/mm<sup>2</sup>]; seeds ellipsoid-cylindrical, c. 1.5 mm long, c. 0.8 mm wide.

*Selected specimens examined.* (Refer under 'Notes' on the two variants of this species).

*Distribution.* Occurs in the Northern Arid (Western Sandplains) province of South Australia, the Central South region of the Northern Territory, and the Eremaean Botanical Province (Carnegie, Giles & Helms Districts) of Western Australia. Figure 11.

*Ecology.* Occurs in open *Eucalyptus gongylocarpa* woodland between sand dunes, on the slopes of granitic hills with *Grevillea*, *Eremophila*, *Acacia* and *Triodia* species in skeletal soils, or in red sands overlying red sandstone with *Cassia artemisioides*.

*Notes.* This species is characterized by two main variants. Although these variants do not appear to be worthy of formal recognition, the main features of each are discussed below.

1. The 'terete leaf' variant (including the Type): This variant has terete leaves or leaves which only have a faint groove along their adaxial surface (0.6-1.1 mm wide); the branches and leaves are silver-green; the indumentum is white. Other features which might be of taxonomic significance include: anthers 0.6-1 mm long and style c. 4.5 mm long. This variant occurs in South Australia, the Bloods Range and Mt Rawlinson area of the Northern Territory, and in Western Australia.

*Selected specimens examined (33 examined).* SOUTH AUSTRALIA: Northern Arid: Western Sandplains (Victoria Desert): *Donner* 7461, 27.viii.1980, 72.5 km W of Vokes Corner (AD); *Jackson* 1449, 24.viii.1980, c. 30 km W of NCSSA Camp 3 (Vokes-Serpentine road)(AD); *Williams* 10544, 20.vii.1979, 65 km W of Vokes Hill road junction (AD).

NORTHERN TERRITORY: Central South: *Butler* 3, -iv.1967, Shaw River (PERTH); *Donner* 4458, 26.viii.1973, c. 18 km N of Docker Aboriginal Mission (AD); *Henry* 416, 10.iv.1972, Bloods Range (AD, BRI); *Johnson* 5106, 3.x.1958, near Mt Rawlinson, Blackstone area (PERTH); *Munir* 5173, 25.viii.1973, on top of Bloods Range (AD); *Munir* 5174, 26.viii.1973, Bloods Range (AD).

WESTERN AUSTRALIA: Eremaean (Giles): *Beaglehole* 60503, 21.ix.1978, 3 km E of Rebecca Creek (MEL); *Munir* 5190, 27.viii.1973, Mt Ant (AD); (Carnegie): *George* 8214, 2.x.1966, 2 miles W of [Gunbarrel Highway] junction [with road to Warburton] N of Warburton (PERTH); (Helms): *Beaglehole* 60102, 18.ix.1978, 208 km by road SW of Warburton Mission (MEL); *Beaglehole* 60125, 18.ix.1978, 171 km by road SW of Warburton (MEL); *George* 8453, 11.x.1960, 40 miles E of Neale Junction (PERTH); *Forde* 1397, 15.x.1960, 5 miles NW of Point Newland (CANB).

2. The 'incurved leaf' variant - Northern Territory: This variant has incurved leaves (0.4-1.4 mm wide) such that they appear to be terete; the branches and leaves are silvery grey-green to blue-green; the indumentum is grey-green. The anthers are larger than those of the 'terete leaf' variant (1-1.5 mm long cf. 0.6-1 mm long); and the style is longer for this variant (c. 6-7 mm long cf. c. 4.5 mm long). Many of the collections examined lacked flowers. Therefore, the small sample available may exaggerate the 'differences' between these two variants. This variant is endemic to the Northern Territory.

*Selected specimens examined (35 examined).* NORTHERN TERRITORY: Central South: *Carr* (& *Beaglehole*) 1386, 8.vi.1974, Serpentine Gorge (AD); *Hill & Lothian* 927, 15.vii.1958, Palm Valley (AD); *Latz* 1907, 27.xii.1971, Gorge N of Larapinta Waters (AD, MEL); *Lazarides* 6128, 5.x.1956, 11 miles S of Tempe Downs (AD, BRI, CANB, MEL, NSW, PERTH, US); *Nelson* 1530, 8.viii.1967, Standley Chasm area (AD); *Willis* s.n., 20.vii.1966, Mt Sonder (MEL).

The relationship between *P. sericea* (particularly the 'incurved leaf' variant) and *P. althoferi* ssp. *longifolia* is unclear. Detailed population studies are required of both species, particularly in the Northern Territory, so that a re-evaluation of their circumscriptions can be undertaken.

The 'terete' variant is occasionally cultivated.

*Conservation status.* Not known. It is thought to be probably not at risk, although locally it is often very rare.

6. *Prostanthera campbellii* F. Muell., S. Cf. Rec. 2: 252 (1882) [as '*P. campbelli*']; C.A. Gardner, Enum. Pl. Austral. Occid. 114 (1931); Blackall & Grieve, W. Austral. Wildfl. 3: 592 (1965); J.S. Beard, Descr. Cat. W. Austral. Pl. 94 (s. dat. [Oct. 1965]); Althofer, Cradle of Incense 154, 161 (1978); Grieve (ed.), Blackall & Grieve, W. Austral. Wildfl. 3B: 452 (1981). *Lectotype* (here chosen): *J. Forrest* s.n., s. dat. [-v-x.1882 (Crowley 1971, p. 118)], Gascoyne River, Western Australia (lecto: MEL 42995; probable isolecto: *J. Forrest* s.n., anno 1882 (-v-x.1882), Gascoyne River - MEL 42996).

Erect, compact to spreading shrub, 0.6-1.5 m high. *Branches* subangular to terete, sparsely to moderately hairy [(45-)100-183.3(-214.8) hairs/mm<sup>2</sup>], rarely glabrous; hairs ± straight, appressed, antrorse, 0.1-0.2 mm long, white; glands absent. Leaves yellow-green (*Chinnock* 5210, 8427), glabrous or sparsely to moderately hairy (rarely densely hairy [up to c. 67(-133) hairs/mm<sup>2</sup>], glands absent; *petiole* absent; *lamina* linear, 10.9-28(-35) × 0.5-1.3 mm [lamina length to width ratio 13.9-39, length of maximum width from base to total lamina length ratio (0.3-)-0.4-0.7(-0.8)], base attenuate, margin entire, usually strongly incurved, apex ± attenuate; venation (including midrib) not visible. *In-florescence* a frondose racemiform confluence, uniflorescence monadic, often with 1 or 2 accessory buds (one of these accessory buds frequently remaining rudimentary);



Figure 3. a - *Prostanthera verticillaris*. Twig and flowers. b - *P. campbellii*. - Twig and flowers (Chinnock 5210). c - *P. canaliculata*. - Twig and flowers (Maxwell 152).

2-16-flowered (if include accessory buds then up to c. 32-flowered) [per confluence]. *Pedice* (0.6-)1.3-3.2 mm long, moderately to densely hairy [(33.3-)50-241.7 hairs/mm<sup>2</sup>], hairs 0.1-0.2 mm long, glands absent; *prophylls* with variable insertion point on pedicel, usually inserted on basal half of pedicel, however often on distal half [ $a_1$  axis to antherodium ratio 0.2-1.4(-2.8)], opposite, narrowly elliptic to linear, 0.5-1.6 mm long, 0.1-0.2 mm wide [length to width ratio 3-15.3, length of maximum width from base to total lamina length ratio up to c. 0.7], moderately to densely hairy (as for pedicel), base attenuate, margin entire, apex subattenuate. *Calyx* green (Lullfitz L. 2886); *tube* 2-4 mm long, outer surface glabrous or densely hairy (at least on adaxial surface) [100-230 hairs/mm<sup>2</sup>], glands absent, inner surface glabrous basally, distally moderately hairy [c. 50-83 hairs/mm<sup>2</sup> or glabrous throughout, moderately glandular basally [c. 80 glands/mm<sup>2</sup>]; *abaxial lobe* depressed ovate to very broadly ovate, 1.1-2.9 mm long, 1-4.6 mm wide [length to width ratio 0.4-1.1], apex rounded, outer surface densely hairy (rarely sparsely hairy [103-231 hairs/mm<sup>2</sup>] or glabrous, glands absent, inner surface moderately to densely hairy distally (rarely sparsely hairy) [(8.3-)23-116.7 hairs/mm<sup>2</sup>] or sometimes glabrous, sparsely glandular basally [c. 25-30 glands/mm<sup>2</sup>]; *adaxial lobe* depressed ovate to ovate, 2-6.5(-8.3) mm long, (2.5-)3-7.5 mm wide [length to width ratio (0.3-)0.6-1.7], apex obtuse to subrounded, outer surface glabrous or sparsely hairy [1.4-16.7 hairs/mm<sup>2</sup>], glands absent, inner surface sparsely to moderately hairy at base [4.9-83 hairs/mm<sup>2</sup>], rarely glabrous; [adaxial lobe length to abaxial lobe length ratio 1-3.3]. *Corolla* 6.5-10 mm long, white to cream-coloured with purple striations on inner surface of tube and/or mouth and base of lobes, inner surface of abaxial median lobe with a yellow blotch; outer surface glabrous basally, sparsely to moderately hairy distally [33-116 hairs/mm<sup>2</sup>]; inner surface sparsely to densely hairy [c. 30-186 hairs/mm<sup>2</sup>], rarely glabrous; hairs of outer surface  $\pm$  straight, 0.1-0.3 mm long; hairs of inner surface weak and loosely tangled, 0.5-0.8 mm long; glands absent; *tube* (2.4-)3-6.2 mm long, diameter at mouth 2.5-3 mm; *abaxial median lobe* spatulate or very broadly obovate to obovate, (1.4-)2.5-4.6(-5.5) mm long, (1.2-)2-4.2 mm wide [length to width ratio 0.8-1.8], apex slightly irregular and rounded, often slightly emarginate (sinus up to c. 0.1 mm long); *lateral lobes* broadly obovate to oblong, ovate or obovate, (1.2-)2-4.3 mm long, 1-3(-3.5) mm wide [length to width ratio 1.1-1.7], apex rounded; *adaxial median lobe-pair* depressed ovate or depressed obovate to very broadly ovate or very broadly obovate, rarely obovate, (1.3-)2-5 mm long, 2-6.5 mm wide [length to width ratio 0.4-0.8 (-1.4)], apex slightly irregular and rounded, bilobed (sinus 0.7-2.5 mm long). *Stamens* inserted (1.6-)2-3.5 mm above base of corolla; filaments 2-3.3 mm long, glabrous; anthers 0.5-1.3 mm long, purple laterally, base of lobes with a minute acumen c. 0.1 mm long, connective extended to form a basal appendage 0.2-0.7 mm long, or appendage absent, appendage (when present) tapering distally into a single narrowly triangular trichome (often with 1-3 smaller trichomes laterally). *Disc* 0.1-0.3 mm high. *Pistil* 5.5-6 mm long; *ovary* obovoid, 0.5-0.7 mm long, diameter at base c. 0.6 mm, lobes 0.1-0.2 mm long, densely glandular distally; *style* 5-5.7 mm long; *stigma lobes* c. 0.5 mm long. *Fruiting calyx* enlarged (abaxial lobe [(? immature) 4.5-]5-14.3 mm long, 6-11.7 mm wide [length to width ratio 0.7-1.3]; adaxial lobe [(? immature) 2.5-]3-5.2 mm long, 3.9-5.9 mm wide [length to width ratio 0.5-0.9]; [adaxial lobe length to abaxial lobe length ratio 0.3-0.5]). *Mericarps* 2-2.4 mm long, distally extended c. 0.5 mm beyond base of style, distal diameter 2-2.3 mm, distal half densely glandular [100-134 glands/mm<sup>2</sup>]; seeds ellipsoid-cylindrical, c. 1.4-1.7 mm long, c. 0.8 mm wide. Figure 3b.

*Selected specimens examined* (37 examined). WESTERN AUSTRALIA: Eremaean (Ashburton): *Chinnock* 4827, 25.ix.1979, 78.1 km SE of Mt Vernon (AD, MEL); (Austin): *Ashby* 4749, 28.vii.1973, c. 47 km E of Meekatharra (AD, MEL); *Chinnock* 5210, 19.x.1981, 63 km ENE of Payne's Find on Sandstone road (AD, MEL); *Corrick* 9095, 28.ix.1984, 31 km S of Menzies on Kalgoorlie road, near Comet Vale (HO, MEL); (Coolgardie): *Webster* s.n., 21.x.1901, Coolgardie (CANB, E, K, PERTH); *Helms* s.n., 12.xi.1891, Gnarlbine (AD, K, MEL, NSW); *Saffrey* 1506, 30.x.1970, 7 miles N of Widgiemooltha (PERTH); *Short* 1953, 6.x.1983, Gnarlbine Rock (MEL PERTH, RSA); (Helms): *Butler* s.n., -v.1959, Queen Victoria Springs (US). - South-West (Irwin):



*Phillips* CBG 25859, 17.ix.1968, c. 14 miles S of Wannoo (PERTH); (Avon): *Lullfitz* L3097b, 6.xii.1963, 4 miles from Warralakin (KP, PERTH); Victor s.n., 26.x.1910, Kununoppin (K).

*Distribution.* Endemic to the Eremaean Botanical Province (Ashburton, Austin, Coolgardie & Helms Districts) and South-West Botanical Province (Avon & Irwin Districts) of Western Australia. Figure 12.

*Ecology.* Occurs in red sandy soils associated with granitic outcrops (*Short* 1953), jasperite ridges (*Speck* 1451), with *Acacia* species, *Eremophila elderi* (*Chinnock* 4827), *Triodia* and *Hakea multilineata* (*Corrick* 9095). *Chinnock* 5210 records this species from 'Red-brown clay loams under mulga'.

*Notes.* This species is closely related to *P. baxteri* and *P. canaliculata*. *P. campbellii* has leaves with length to width ratios of 13.9-39 [cf. *P. baxteri* (2.5-)3-13; *P. canaliculata* 2.7-5.3]; prophylls moderately to densely hairy [cf. *P. baxteri* glabrous or with an occasional hair; *P. canaliculata* glabrous]; anthers more or less smooth, not cristate dorsally [cf. both *P. baxteri* and *P. canaliculata* cristate]; corolla with purple striations and yellow spots [cf. *P. baxteri* mid-brown to dull orange spots; *P. canaliculata* lacking markings]; fruiting calyx enlarged - fruiting abaxial calyx lobe to flowering abaxial calyx lobe ratio (1.7-)2-2.5 [cf. *P. baxteri* and *P. canaliculata* unchanged or only slightly enlarged - fruiting abaxial calyx lobe to flowering abaxial calyx lobe ratio 1-1.4].

In *P. campbellii* there are usually 1 or 2 accessory buds present in at least some of the uniflorescences of a conflorescence. Therefore, the uniflorescences are 1-3-flowered, whereas those of the other two species appear to be consistently monadic.

The presence or absence of an anther appendage is extremely variable even in the flowers of one specimen.

This species also has close affinities with *P. petrophila* (refer 'Notes' of the latter species for discussion of similarities and differences).

*Conservation status.* Not known. Recorded as abundant (*Chinnock* 4827, *Corrick* 9095) and once recorded as uncommon (*Chinnock* 5210).

7. *Prostanthera canaliculata* F. Muell., *Fragm.* 6: 105 (1868); Benth., *Fl. Austral.* 5: 102 (1870); C.A. Gardner, *Enum. Pl. Austral. Occid.* 114 (1931); Blackall & Grieve, *W. Austral. Wildfl.* 3: 592 (1965); Beard, *Descr. Cat. W. Austral. Pl.* 94 (s. dat. [Oct. 1965]); Althofer, *Cradle of Incense* 154 & 161 (1978); Grieve (ed.), Blackall & Grieve, *W. Austral. Wildfl.* 3B: 452 (1981). *Lectotype* (here chosen): *Maxwell* s.n., s. dat., 'Fitzgerald Echo, Fitzgerald River', Western Australia (lecto: MEL 43004). *Other syntypes*: *Drummond* (Collection s.n.) 343, s. dat. [1849], s. loc. ['flumen Murchisonii versus', *Mueller* 1868, p. 105] (MEL 43005, OXF - photo); *Mueller* s.n., -x.1867, 'Heaths on the Upper Kalgan [River]' (MEL 43003).

Erect shrub, 0.3-0.6(-1.2) m high. *Branches* terete, densely hairy (rarely sparsely hairy) [(25-)60-184 hairs/mm<sup>2</sup>], usually appearing whitish; hairs  $\pm$  straight, appressed and antrorse, 0.1-0.3 mm long, white; glands absent. *Leaves* silver-green or green, glands absent; *petiole* absent or up to 0.5(-0.8) mm long, densely hairy (as for branches); *lamina* narrowly ovate to narrowly elliptic, 3.8-7(-9.8)  $\times$  0.9-1.6 mm [length to width ratio 2.7-5.3, length of maximum width from base to total lamina length ratio 0.2-0.4(-0.7)], slightly thickened, base subattenuate to obtuse, margin entire, usually strongly incurved, apex obtuse; venation (including midrib) not visible; abaxial surface glabrous or sometimes with an occasional hair; adaxial surface sparsely to moderately hairy [4-50(-76.7) hairs/mm<sup>2</sup>] or glabrous, hairs  $\pm$  straight, appressed and antrorse, 0.1-0.3 mm long, white; (petiole length to lamina length ratio up to 0.1). *Inflorescence* a frondose racemiform conflorescence, uniflorescence monadic; 2-16-flowered [per conflorescence]. *Pedicel* 1-1.6 mm long, glabrous or with a few scattered hairs distally, glands absent; *prophylls* usually inserted on basal half of pedicel to about halfway up



pedicel, rarely inserted on distal half [a<sub>1</sub> axis to anthopodium ratio 0.2-1.4(-10)], opposite, soon deciduous or undeveloped, narrowly elliptic, narrowly obovate to almost linear, 0.3-0.8(-1.2) mm long, 0.1-0.3(-0.4) mm wide [length to width ratio 3-7, length of maximum width from base to total lamina length ratio up to 0.6], glabrous, base attenuate, margin entire, apex subattenuate. *Calyx* ? green with mauve, purple to dark green tinge on adaxial lobe [interpreted from *Canning* CBG 38744 & *Muir* 4136]; tube 2-3.1 mm long, outer surface glabrous or with a few scattered hairs distally; *abaxial lobe* depressed ovate, rarely perpedepressed subtriangular, 1.3-2.2 mm long, 2.3-4.4 mm wide [length to width ratio (0.3-)-0.4-0.7], apex obtuse, outer surface glabrous except for occasional hairs near margin, glands absent, inner surface densely hairy [c. 100-150 hairs/mm<sup>2</sup>]; *adaxial lobe* depressed ovate to very broadly ovate, 1-1.6 mm long, 1.7-2.9 mm wide [length to width ratio 0.4-0.8], apex obtuse, outer surface glabrous except for occasional hairs near margin, glands absent, inner surface densely hairy [c. 300 hairs/mm<sup>2</sup>]; [adaxial lobe length to abaxial lobe length ratio 0.7-1]. *Corolla* 6.5-10 mm long, pale violet, pale blue to white, lacking markings, outer surface glabrous on tube and moderately to densely hairy on lobes [38-150 hairs/mm<sup>2</sup>], glands absent, inner surface glabrous on tube and moderately hairy on lobes [30- c. 50 hairs/mm<sup>2</sup>], glands absent; *tube* 2.9-6.9 mm long, diameter at mouth 3-4 mm; *abaxial median lobe* spatulate, 3.1-5.2 mm long, 3.2-5.2 mm wide [length to width ratio 0.8-1.2], apex irregular and rounded, usually retuse (sinus c. 0.4 mm long); *lateral lobes* broadly ovate to ovate, 2-4.2 mm long, 1.2-3.1 mm wide [length to width ratio 1-2], apex obtuse; *adaxial median lobe-pair* depressed ovate to very broadly ovate, 1.6-3.3(-5.2) mm long, 3.4-4.7(-7.8) mm wide [length to width ratio 0.4-0.7], apex irregular and rounded, retuse to bilobed (sinus 0.3-1.1(-2.6) mm long). *Stamens* inserted (1.9-)2.4-3.3 mm above base of corolla; filaments 1.5-2.9 mm long, glabrous; anthers 0.7-1.3 mm long, lobes cristate on basal dorsal surface and with small acumen basally, connective extended to form a basal appendage 0.6-1 mm long, terminating in 3-6 narrowly triangular trichomes. Disc c. 0.2 mm high. *Pistil* 4.5-5 mm long; *ovary* cylindrical-obovoid, c. 0.5 mm long, diameter at base 0.5-0.6 mm, lobes c. 0.1 mm long, glands absent; *style* 3.6-4.1 mm long; *stigma lobes* c. 0.4 mm long. *Fruiting calyx* unchanged or very slightly enlarged (abaxial lobe 1.8-2.3 mm long, (2.6-) 3-4.5 mm wide [length to width ratio 0.5-0.8]; adaxial lobe 1.3-2 mm long, 1.7-3.4 mm wide [length to width ratio 0.4-1]); [adaxial lobe length to abaxial lobe length ratio 0.6-0.9]). *Mericarps* 1.8-2 mm long, distally 0.5-1 mm extended beyond base of style, distal diameter 2.3-2.7 mm, glands absent; seeds ellipsoid-cylindrical, c. 1.1-1.3 mm long, c. 0.5 mm wide. Figure 3c.

*Selected specimens examined* (20 examined). WESTERN AUSTRALIA: South-West (Avon): *Maiden* s.n., -ix.1909, Tammin (F); *Sewell* s.n., anno 1890, Mt Caroline (MEL 43878); (Roe): *Gardner* 13818, 28.x.1961, Pingrup (PERTH); (Eyre): *Drummond* 4th Collection 166, s. dat. [anno 1847 (Erickson 1969, p. 168)], Cape Riche (LE); *Drummond* 4th Collection 166, anno 1848 [1847], South West Australia [possibly Cape Riche] (MEL 43000, NSW, PERTH); *Drummond* [4th Collection] 166, anno [18]48 [1847], Swan River [Colony] (P); *Gardner* s.n., -ix.1926, Phillips River (PERTH); *Canning* (CBG 38744) s.n., 11.xi.1968, West River (AD); *Gardner* 13772, 26.x.1961, West River (PERTH); *Muir* 4136, 3.x.1966, West River (MEL); (Darling - Kalgan River): *Mueller* s.n., -x.1867, (MEL 43003); *Oldfield* s.n., s. dat. (MEL 43001).

*Distribution*. Endemic to the South-West Botanical Province (Avon, Darling, Eyre & Roe Districts) of Western Australia. Figure 12.

*Ecology*. Occurs in heath communities, in sandy soils (*Muir* 4136, *Newbey* 1891) and amongst granitic rocks (*Gardner* 13772).

*Notes*. The features which characterize this species are: the small flowers; the outer surface of the calyx is glabrous (except for occasional hairs at base and margin); the calyx does not enlarge or only slightly during fructescence; the inner surface of the corolla is moderately hairy; the pistil lacks glands and hairs; the prophylls are undeveloped, soon deciduous (often while flowers are in bud, almost never present in fruiting material), very small; and the leaves are smaller (e.g. shorter, with length to width ratio smaller)

than for *P. campbellii*. Refer 'Notes' for *P. campbellii* for further explanations of differences between these two species. *P. canaliculata* has its closest affinities with *P. baxteri* and *P. campbellii*.

The prophylls develop at a slower rate than the flower. Flower buds which are almost ready to open often have only rudimentary or very small prophylls present. Sometimes the prophylls do not develop beyond a rudimentary swelling on the pedicel.

Bentham (1870) described *P. canaliculata* var. *canosericea* based on very inadequate material. The status of this taxon can not be resolved until adequate material is available (refer 'Species of Uncertain Position').

*Conservation status.* Not known.

8. ***Prostanthera baxteri*** A. Cunn. ex Benth., Labiat. Gen. Spec. 452 & 453 (1834); D. Dietr., Syn. Pl. 3: 427 (1842); Walpers, Rep. Bot. Syst. 3: 767 (1844); Benth. in DC., Prodr. 12: 561 (1848); F. Muell., Fragm. 6: 106 (1868); Benth., Fl. Austral. 5: 102 (1870); C.A. Gardner, Enum. Pl. Austral. Occid. 114 (1931); Blackall & Grieve, W. Austral. Wildfl. 3: 593 (1965) (p.p. incl. *P. althoferi*); Althofer, Cradle of Incense 154 (p.p. incl. *P. althoferi* ssp. *longifolia*), 158 (p.p. incl. *P. althoferi* ssp. *longifolia*), 159, 160, 162 (p.p. incl. *P. althoferi* ssp. *longifolia*) (1978); Grieve (ed.), Blackall & Grieve, W. Austral. Wildfl. 3B: 451 (1981) (p.p. incl. *P. althoferi*). *Lectotype* (here chosen): *Baxter* s.n., anno 1829, 'somewhere on the S<sup>o</sup>. Coast of Aust<sup>a</sup>.' [King George's Sound] (Bentham 1834, p. 452) [Western Australia] (lecto: K - upper right specimen). *Probable syntype*; *Baxter* s.n., s. dat. [?1829] (see Typification). Thomas River [Western Australia] (K - lower three specimens, excl. lectotype; MEL 42970) [see "Typification"].

*P. baxteri* var. *crassifolia* Benth., Fl. Austral. 5: 102 (1870); Blackall & Grieve, W. Austral. Wildfl. 3: 593 (1965); Althofer, Cradle of Incense 154 (p.p. incl. *P. althoferi* ssp. *longifolia*) & 162 (p.p. incl. *P. althoferi* ssp. *longifolia*) (excl. p. 158 - refers to *P. althoferi* ssp. *longifolia*) (1978); Grieve (ed.), Blackall & Grieve, W. Austral. Wildfl. 3B: 452 (1981). *Lectotype* (here chosen): *Maxwell* s.n., s. dat., Eyres Range, Western Australia (lecto: MEL 42962). *Other syntype*: *Maxwell* s.n., s. dat., Phillips Flats, Phillips River [Western Australia] (MEL 42965).

Erect shrub, 0.3-1.3 m high. *Branches* subangular to terete, densely hairy [88-185(-208) hairs/mm<sup>2</sup>], usually appearing whitish; hairs  $\pm$  straight, appressed, antrorse, 0.2-0.4 mm long, white; glands absent. *Leaves* green, sparsely to densely hairy [16.7-92(-121) hairs/mm<sup>2</sup>], rarely with only a few scattered hairs [up to 4.5 hairs/mm<sup>2</sup>] or glabrous, hairs  $\pm$  straight, appressed, antrorse, glands absent; *petiole* absent; *lamina* narrowly ovate to linear, 4.8-15  $\times$  0.9-2(-4.3) mm [length to width ratio (2.5-)3-13, length of maximum width from base to total lamina length ratio 0.1-0.7], base obtuse to subattenuate, margin entire and incurved, apex obtuse; venation (including midrib) not visible. *Inflor-escence* a frondose racemiform confluence, uniflorescence monadic; 8-14-flowered [per confluence]. *Pedicel* 1.2-3.8 mm long, densely hairy [(116-)158-283.3 hairs/mm<sup>2</sup>], hairs 0.2-0.3 mm long, glands absent; *prophylls* inserted on distal half of pedicel [ $a_1$  axis to anthopodium ratio (0.4-)0.7-10], opposite, narrowly elliptic, narrowly obovate to linear, 1-3.9 mm long, 0.2-0.7 mm wide [length to width ratio (2-)4-11.7(-14), length of maximum width from base to total lamina length ratio 0.3-0.7], with occasional hairs [up to c. 6 hairs/mm<sup>2</sup>] or glabrous, base attenuate, margin entire and incurved, apex obtuse. *Calyx* green with maroon tinge on abaxial surface; tube 2.1-3.8(-4.3) mm long, outer surface densely hairy on adaxial surface [83-195(-227) hairs/mm<sup>2</sup>], abaxial surface glabrous or with an occasional hair [up to c. 9 hairs/mm<sup>2</sup>], glands absent, inner surface glabrous; *abaxial lobe* very broadly ovate to broadly ovate, 2.8-4.5 mm long, (3-)3.6-6.1 mm wide [length to width ratio 0.6-1.1], apex obtuse, outer surface sparsely hairy (rarely moderately hairy) [3.4-30(-75) hairs/mm<sup>2</sup>] or glabrous, glands absent, inner surface moderately to densely hairy [72-167 hairs/mm<sup>2</sup>]; *adaxial lobe* very broadly ovate to broadly ovate or broadly oblong, rarely ovate, 1.5-3.2 mm long, (1.4-)1.6-2.9 mm wide [length to width ratio 0.7-1.3(-1.7)], apex obtuse, rarely subacute, outer surface moder-

ately to densely hairy [(66-)83-227 hairs/mm<sup>2</sup>], glands absent, inner surface moderately to densely hairy [as for outer surface]; [adaxial lobe length to abaxial lobe length ratio 0.3-0.8]. *Corolla* 10.5-13 mm long, white, with tinge of blue to pale mauve on tube, darker on outer abaxial surface, mid-brown to dull orange spots along medial line on inner abaxial surface of throat to base of abaxial median lobe, with 2 additional mid-brown spots at base of abaxial median lobe, outer surface glabrous or sparsely hairy [up to c. 14 hairs/mm<sup>2</sup>] on tube, and densely hairy on lobes [81-100 hairs/mm<sup>2</sup>], glands absent, inner surface of tube glabrous, lobes sparsely to densely hairy [20-80 hairs/mm<sup>2</sup>], glands absent; *tube* 4.5-7.4 mm long, diameter at mouth 4-5 mm; *abaxial median lobe* spatulate, 2.7-5.6 mm long, 1.9-5.7 mm wide [length to width ratio 0.8-1.6], apex slightly irregular and rounded,  $\pm$  bilobed [sinus 0.2-1 mm long]; *lateral lobes* very broadly ovate to ovate, sometimes broadly obovate, 1.8-4.6 mm long, 2.1-3.8(-4.8) mm wide [length to width ratio 0.8-2.1], apex obtuse; *adaxial median lobe-pair* depressed ovate or rarely transverse-oblong, to ovate, 1.9-3.9 mm long, 2.2-6(-7.2) mm wide [length to width ratio 0.5-0.6(-1.1)], apex irregular and rounded, bilobed [sinus (0.4-)0.8-1.9 mm long]. *Stamens* inserted (1.7-)2.4(-5.2) mm above base of corolla; filaments (1.5-)2-4.2 mm long, glabrous; anthers 0.7-1.4 mm long, lobes cristate on basal dorsal surface, connective extended to form a basal appendage 0.5-1.1 mm long, terminating in 4 or 5 narrowly triangular trichomes. *Disc* 0.3-0.5 mm high. *Pistil* 6-7 mm long; *ovary* cylindrical-obovoid, 0.6-0.7 mm long, diameter at base 0.7-0.8 mm, lobes 0.1-0.5 mm long, glabrous and glands absent; *style* 5.2-6 mm long; *stigma lobes* 0.4-0.5 mm long. *Fruiting calyx* unchanged or only slightly enlarged (abaxial lobe 2.9-6.2 mm long, 3.9-6 mm wide [length to width ratio 0.6-1.2]; adaxial lobe 2-3.4 mm long, 2-3.9 mm wide [length to width ratio 0.7-1.2]); [adaxial lobe length to abaxial lobe length ratio 0.5-0.9]. *Mericarps* 2-2.5 mm long, distally 0.9-1.2 mm extended beyond base of style, distal diameter c. 2 mm, glands absent; seeds ellipsoid-cylindrical, c. 1.5 mm long, c. 0.8 mm wide. Figure 4a.

*Selected specimens examined* (27 examined). WESTERN AUSTRALIA: South-West (Roe): *Hill & Jordan* s.n., -ix.1953, Ongerup (AD); (Eyre): *Andrews* s.n., -x.1903, Hammersley [River] (NSW 128378); *Barker* 2560, 21.x.1968, 58 km N of mouth of Oldfield River (AD, MEL); *Beard* 5334, 28.x.1967, Mt Baring (KP, PERTH); *Blackall* s.n., -ix.1930, Gibson's Soak (PERTH); *Gardner* 1818, 17.ix.1925, Phillips River (PERTH); *Gardner* 12944, 23.x.1960, Thomas River (PERTH); *Haegi* 1226, 6.x.1976, c. 62 km ENE of Esperance (AD, MEL); *Muir* 4260, 6.x.1966, Cape le Grande (MEL); *Newbey* 2733, 27.x.1967, Thumb Peak (PERTH); *Orchard* 1419, 9.x.1968, Lort River (AD, MEL, PERTH); *Royce* 3683, 13.viii.1951, 23 miles W of Ravensthorpe (PERTH); *Royce* 9870, 29.xi.1971, Cape Arid National Park (PERTH).

*Distribution.* Endemic to the southern South-West Botanical Province (Eyre & Roe Districts) of Western Australia. Figure 14.

*Ecology.* Occurs in dark to light (yellow - *Gardner* 1818) sandy soils, often in shallow pans over granite or amongst granite outcrops in Mallee and Heath communities.

*Typification.* An herbarium sheet at K contains five specimens collected by Baxter. In the upper right of this sheet the label (in A. Cunningham's hand) states that 'shrub discovered by Mr. Wm. Baxter, somewhere on the S<sup>o</sup>. coast of Aust<sup>o</sup>. [Australia] in 1829. Who gave me this solitary specn. [specimen].' Although there are now two specimens on this part of the sheet, it is assumed that these were originally part of a single collection. It is assumed that the locality cited on this label (see above) is comparable to 'King George's [Georges] Sound' as cited in the protologue (Bentham 1834, p. 453).

The other three specimens, which are mounted lower on this sheet, were collected by Baxter from the 'Thomas river' area (specimen also in MEL 42970). These can probably be regarded as syntype material. The label on the Kew sheet of the 'Thomas river' collections has 'F. Mueller 1869' written by an unknown hand. It is presumed that this refers to the date that this specimen was either sent by Mueller to Bentham or the date that it was received by Bentham from Mueller. It is not the date of collection because Baxter left Australia in 1830 and died before 1836 (Desmond 1977, and references therein).



*Notes.* The circumscription of this species has been progressively broadened and changed by most authors since Bentham (1834). Likewise, Bentham's concept of *P. baxteri* var. *crassifolia* (Bentham 1870, p. 102) has been changed so much that it now refers to a different taxon (namely *P. althoferi*). This name is reduced to synonymy because it is merely a variant which has slightly more fleshy leaves (hence broader) and it is often less hairy than typical *P. baxteri*.

This species is closely related to *P. campbellii* and *P. canaliculata*. The three species are sometimes difficult to distinguish from each other. Refer 'Notes' under *P. campbellii* for differences between these three taxa.

*Conservation status.* Not known. Once recorded as an occasional shrub (*Haegi* 1226).



Figure 4. a - *Prostanthera baxteri*. Twig and flowers (*Barker* 2560). b - *P. althoferi* ssp. *althoferi*. Twig and flowers (*Weber* 4752). c - *P. althoferi* ssp. *longifolia*. Twig and flowers (*Chinnock* 2641).

### 9. *Prostanthera althoferi* Conn. sp. nov. (Figure 4b)

Species nova Sectionis *Prostantherae*. Frutices circa 0.5-3 m alti. Rami et ramuli teretes usque subquadrangulares, pilis densis vestita, argentei cano-virides, pilis 0.2-0.5 mm longis, glandibus absentibus. Folia argentei cano-virides, pilis densis vestita; petiolus absens vel usque ad 0.4 mm longus; lamina anguste obovata usque linearis. raro obovata, 7.3-36(-43) mm longa, 1.2-2.5(-3.4) mm lato, basi attenuata, margine integro, apice obtuso, raro subrotundato. Pedicellus florum 0.9-3.3(-4.2) mm longus, pilis densis vestita, pilis 0.2-0.4 mm longis, glandibus absentibus; prophyllis anguste oblongis usque linearibus, 0.7-3.6 mm longis, 0.1-0.4 mm latis. Tubus calycis 1.8-4 mm longus, extra pilis moderatis usque densis vestita, glandibus absentibus, interius glaber vel pilis sparsis vestita distaliter; lobus abaxialis depresso ovatus usque latissime ovatus, (1.2-) 1.8-2.9 mm longus, 2-4 mm latus, apice rotundato, saepe leviter undulato, extra pilis moderatis usque densis vestita, glandibus absens, interius pilis moderatis usque densis; lobus adaxialis latissime ovatus usque ovatus, interdum subdepresso ovatus, (2-)3.4-5.6 mm longus, 2.6-6.5 mm latus, apice obtuso usque rotundato, extra pilis sparsis usque densis vestita, glandibus absentibus, interius pilis moderatis usque densis vestita. Corolla 6.5-9(-10) mm longa, plus minusve alba, striis malvinis vel purpureis in interius pagina, interius pilis sparsis usque moderatis vestita; tubus 3.4-6.5 mm longus; lobus abaxiali-medianus spathulatus vel latissime obovatus usque subobovatus, 3.3-6.6 mm longus, 2.7-5.5 mm latus, apice irregulari et rotundato, lobis lateralibus latissime obovatis vel subcircularis usque obovatis, oblongibus, latissime ovatis usque ovatis, vel latissime ellipticis, 2.2-5.1(-6) mm longis, 1.5-3.6 mm latis, apice obtuso usque rotundato et saepe leviter irregulari, pari loborum adaxiali-mediano depresso obovato usque latissime obovato, 2.6-5(-6) mm longo, 4-7.3(-7.8) mm lato, apice leviter irregulari et rotundato, bilobato, sinu 1.4-2.9 mm longo. Stamina 1-2.8 mm e basi corollae affixa; filamenta 2.4-4 mm longa; antherae 0.7-1.5 mm longae, appendice 0.3-1 mm longa. Pistillum 5-8 mm longum; ovarium 0.3-1.3 mm longum, glandibus distaliter; stylus 5-7 mm longus; lobis stigmatis 0.3-0.7 mm longis. Calyx fructus auctus. Mericarpiia 1-2.5 mm longa, glandibus distaliter.

Typus: Weber 4752, 17.ix.1975, c. 30 km NW of Leonora, Western Australia (holo: MEL 671076; iso: AD 97549211, CANB, K, MEL 671075, MO, NSW, PERTH).

Erect shrub, c. 0.5-3 m high. Branches terete to subquadrangular, densely hairy [112.5-208 hairs/mm<sup>2</sup>], appearing silvery grey-green; hairs ± straight, appressed, antrorse, 0.2-0.5 mm long, white or grey; glands absent. Leaves silvery grey-green, densely hairy [(58-)95-225 hairs/mm<sup>2</sup>]; hairs ± straight, appressed, antrorse, 0.2-0.5 mm long, white or grey; glands absent; petiole absent or up to 0.4 mm long; lamina narrowly obovate to linear, rarely obovate, 7.3-36(-43) × 1.2-2.5(-3.4) mm; base attenuate; margin entire; apex obtuse, rarely subrounded; venation (including midrib) not visible. Inflorescence a frondose racemiform corymbose, uniflorescence monadic, sometimes with 1 or 2 accessory buds; 4-20-flowered [per corymbose]. Pedicel 0.9-3.3(-4.2) mm long, densely hairy [142-258 hairs/mm<sup>2</sup>], hairs 0.2-0.4 mm long, glands absent; prophylls narrowly oblong to linear, 0.7-3.6 mm long, 0.1-0.4 mm wide [length to width ratio 4-14, length of maximum width from base to total lamina length ratio 0], densely hairy [as for pedicel], not contracted at base, margin entire, apex obtuse. Calyx green to cream-coloured with maroon tinge; tube 1.8-4 mm long, outer surface moderately to densely hairy [36.7-179.2 hairs/mm<sup>2</sup>], glands absent; inner surface glabrous or sparsely hairy in mouth; abaxial lobe depressed to very broadly ovate, (1.2-)1.8-2.9 mm long, 2-4 mm wide [length to width ratio 0.6-1.1], apex rounded, often slightly undulate, outer surface moderately to densely hairy [67-187.5 hairs/mm<sup>2</sup>], glands absent, inner surface moderately to densely hairy [c. 35-187 hairs/mm<sup>2</sup>]; adaxial lobe very broadly ovate to ovate, sometimes subdepressed ovate, (2-)3.4-5.6 mm long, 2.6-6.5 mm wide [length to width ratio 0.6-1.8], apex obtuse to rounded, outer surface sparsely to densely hairy [(8-)15-181 hairs/mm<sup>2</sup>], glands absent, inner surface moderately to densely hairy [c. 30-100 hairs/mm<sup>2</sup>]; [adaxial lobe length to abaxial lobe length ratio 1.2-5]. Corolla 6.5-9(-10) mm long, white to cream-coloured, or very pale yellow-green, with mauve or purple (to pink) striations on inner surface of tube and/or mouth and base of lobes, inner surface of abaxial



*median lobe* often with 2 yellow spots; inner surface sparsely to moderately hairy [18-60 hairs/mm<sup>2</sup>], hairs weak and usually slightly tangled, 0.4-0.5 mm long; *tube* 3.4-6.5 mm long, diameter at mouth 3.4-5.5 mm; *abaxial median lobe* spatulate or very broadly obovate to subobovate, 3.3-6.6 mm long, 2.7-5.5 mm wide [length to width ratio 1-1.8], apex irregular and rounded; *lateral lobes* very broadly obovate or subcircular to obovate, oblong, very broadly ovate to ovate, or broadly elliptic, 2.2-5.1(-6) mm long, 1.5-3.6 mm wide [length to width ratio 0.9-2.3], apex obtuse to rounded and often slightly irregular; *adaxial median lobe-pair* depressed to very broadly obovate, 2.6-5(-6) mm long, 4-7.3(-7.8) mm wide [length to width ratio 0.3-1], apex slightly irregular and rounded, deeply bi-lobed (sinus 1.4-2.9 mm long). *Stamens* inserted 1-2.8 mm above base of corolla; filaments 2.4-4 mm long, glabrous; anthers 0.7-1.5 mm long, connective extended to form a basal appendage 0.3-1 mm long. *Disc* c. 0.4-0.8 mm high. *Pistil* 5-8 mm long; *ovary* ± cylindrical to cupiform or obovoid, 0.3-1.3 mm long, diameter at base 0.7-1 mm, lobes 0.1-0.2 mm long, sparsely to densely glandular distally; *style* 5-7 mm long; *stigma lobes* 0.3-0.7 mm long. *Fruiting calyx* enlarged (abaxial lobe 5-16 mm long, 4-15 mm wide [length to width ratio 1-2.2]; adaxial lobe 2-5.5 mm long, 2.7-6.5 mm wide [length to width ratio 0.6-1.3]; [adaxial lobe length to abaxial lobe length ratio 0.3-0.5]. *Mericarps* 1-2.5 mm long, distally 0.4-0.8 mm extended beyond base of style, distal diameter (1.8-)2-2.4 mm, moderately to densely glandular [33-80 glands/mm<sup>2</sup>]; seeds cylindrical-ellipsoid, c. 1.3-1.5 mm long, 0.6-0.8 mm wide.

*Selected specimens examined.* (Refer under subspecies).

*Distribution.* Occurs in the Northern Territory, South Australia and Western Australia. Figure 11.

*Ecology.* (Refer under subspecies).

*Notes.* This species has been frequently confused with *Prostanthera wilkieana*. *P. wilkieana* differs from this species by having longer more or less patent hairs (up to 2.1 mm long) which vary from antrorse to retrorse, longer prophylls (1.1-4.6 mm long cf. 0.7-1.6 mm long for *P. althoferi*), and a shorter pistil (2.2-5 mm long cf. 7-8 mm long for *P. althoferi*).

*Conservation status.* Does not appear to be threatened or endangered.

*Etymology.* This species honours the naturalist G.W. Althofer whose contribution to the cultivation of Australian plants and, in particular, his profound admiration of the genus *Prostanthera*, has significantly increased public awareness of the Australian flora.

### Key to Subspecies

- 1a. Lamina 7.3-16 mm long [length to width ratio (2.5-)3.2-9.1]; anthers not cristate dorsally; inner surface of calyx with an occasional gland ..... 9.1 ssp. *althoferi*
  - 1b. Lamina (17-)20-36(-41.5) mm long [length to width ratio 9.2-60(-83)]; anthers cristate dorsally (at least some anthers in each flower); inner surface of calyx moderately glandular..... 9.2 ssp. *longifolia*
- 9.1 ssp. **althoferi**

Shrub c. 0.5-1.3 m high. *Leaf lamina* narrowly obovate, rarely obovate, 7.3-16 × 1.2-2.5 mm [length to width ratio (2.5-) 3.2-9.1, length of maximum width from base to total lamina length ratio 0.6-0.8]. *Prophylls* inserted on distal half of pedicel [a<sub>1</sub> axis to anthopodium ratio 1.3-3.3]. *Calyx* pale green to cream-coloured (*George* 8093); *tube* (2.5-)3-4 mm long; inner surface very sparsely to moderately glandular [up to c. 50 glands/mm<sup>2</sup>]; *abaxial lobe* 1.8-2.6 mm long, 2.6-3.4 mm wide, inner surface moderately hairy [c. 35-45 hairs/mm<sup>2</sup>], very sparsely to moderately glandular [up to c. 50 glands/mm<sup>2</sup>]; *adaxial lobe* 4.5-5.6 mm long, 2.6-6 mm wide [length to width ratio 0.8-1.8], outer surface moderately to densely hairy [36-80 hairs/mm<sup>2</sup>], inner surface very sparsely glandular [up to c. 3 glands/mm<sup>2</sup>]; [adaxial lobe length to abaxial lobe length ratio 1.6-2.5]. *Corolla* with outer surface glabrous, sometimes sparsely hairy distally [up to c. 30 hairs/mm<sup>2</sup>],

glands absent; *tube* 5.2-6.5 mm long; *abaxial median lobe* subobovate to spatulate, 4.3-6.6 mm long, 2.7-4 mm wide [length to width ratio 1.1-1.8]. *Stamens* with anthers not cristate dorsally; appendage tapering into a single narrowly triangular trichome (often with 1-3 smaller trichomes laterally). *Ovary* lobes sparsely to moderately glandular distally. Figure 4b.

*Selected specimens examined (55 examined)*. WESTERN AUSTRALIA: Eremaean (Austin): *Aplin* 4552, 26.viii.1963, 22 miles N of Paynes Find (PERTH); *Broadbent* 1722, 12.x.1953, 12 miles W of Sandstone (F); *Conn* 1928-1931, 3.ix.1985, 15 km S of Menzies (MEL); *Conn* 2032, 8.ix.1985, 3.1 km E of road to Gabyon Homestead on Geraldton to Mt Magnet road (AD, KUN, MEL, MO, PERTH); *George* 4359, 7.ii.1963, Mt Morgan (PERTH); *Jutson* 275, -.xii.1916, Comet Vale (NSW); *Weber* 4767, 4768, 19.x.1975, c. 2 km [?] of Leonora (AD, MEL); (Coolgardie): *Bale* 124, -.ix.1965, Mt Hunt (PERTH); *Eichler* 20027, 30.x.1968, c. 10 km WSW of Kalgoorlie (AD, MEL, PERTH); *Gardner* 12215, 16.x.1959, Koolyanobbing Range (PERTH); *Russell* s.n., anno 1896, between Dundas & Diamond Rocks (MEL 1512041); (Helms): *George* 8093, 28.ix.1966, 21 miles NE of Laverton (KP, MO, PERTH). - South-West (Avon): *Maiden* s.n., -.x.1909, Pindar (NSW).

*Distribution*. Endemic to the Eremaean Botanical Province (Austin, Coolgardie & western Helms Districts) and South-West Botanical Province (northern Avon District) of Western Australia. Figure 11.

*Ecology*. Occurs on red sandy soils, often associated with rocky areas (granitic outcrops and granite breakaways) and lateritic soils, with *Acacia aneura*, *Allocasuarina* spp., *Dodonaea* spp., *Eremophila* spp., *Eucalyptus pyriformis*, *Hemigenia* sp., and spinifex (*Triodia* spp.).

9.2 ssp. **longifolia** Conn, ssp. nov. (Figure 4c)

*P. striatiflora* F. Muell. var. *sericea* Benth., Fl. Austral. 5: 104 (1870) (as 'Var. ?sericea'); Althofer, Cradle of Incense 92 (1978). *Lectotype* (here chosen): *Sullivan* s.n., s. dat., 'Gawler Ranges', South Australia (MEL 43794).

*P. baxteri* var. *crassifolia* auct. non Benth. (1870); J.M. Black, Fl. S. Austral. 3: 737 (1926); op. cit. 2nd edn 4: 737 (1965); Althofer, Cradle of Incense 154(p.p.), 158(p.p.), 162(p.p.) (1978); Haegi, in J. Jessop (ed.), Fl. Central Austral. 310(p.p. - included under *P. wilkieana*) (1981).

*P. sp. B*: Conn, in J. Jessop & H. Toelken (eds). Fl. S. Austral. 3: 1218 & 1219 (1986).

*Frutices* 1-3 m alti. *Lamina foli* anguste obovata usque linearis. (14.8-)17-36(-43) mm longa, 0.4-2.2(-2.5) mm lata. *Prophylla* plerumque circa ad medium pedicello affixa. *Calyx* probabiliter viridis; *tubus* 1.8-3 mm longus, interius glandibus moderatis vestita; *lobus abaxialis* (1.3-)2-2.9 mm longus, 2.1-4 mm latus, interius pilis moderatis usque densis vestita, glandibus moderatis vestita; *lobus adaxialis* (2.1-)3.4-5.4 mm longus, 3.4-6.5 mm latus, extra pilis sparsis usque densis vestita, glandibus moderatis vestita. *Corolla* extra basaliter glabra et distaliter pilis sparsis usque densis vestita, glandibus sparsis vestita; *tubus* 3.4-6.5 mm longus; *lobus abaxiali-medianus* spatulatus vel latissime obovatus usque late obovatus, 3.3-5.5 mm longus, 2.7-5.5 mm latus. *Stamina antheris* dorsaliter cristatis, appendice distaliter 1 usque circa 3 anguste triangularibus trichomatibus. *Ovarium lobis* distaliter glandibus moderatis usque densis vestita.

*Typus*: *Chinnock* 2641, 28.ix.1975, 33 km W of Wynbring, South Australia (holo: MEL 1552680; iso: AD 97544117, MEL 1552681, NSW, PERTH).

Shrub 1-3 m high. *Leaf lamina* narrowly obovate to linear, (14.8-)17-36(-43) × 0.4-2.2(-2.5) mm [length to width ratio 9.2-20(-23), length of maximum width from base to total lamina length ratio 0.5-0.9]. *Prophylls* with a variable insertion point on pedicel, usually inserted approximately halfway up pedicel [ $a_1$  axis to anthopodium ratio (0.3-) 0.8-1.7(-3.3)]. *Calyx* ? green; *tube* 1.8-3 mm long; inner surface moderately glandular [c. 60-70 glands/mm<sup>2</sup>]; *abaxial lobe* (1.3-)2-2.9 mm long, 2.1-4 mm wide, inner surface moderately to densely hairy [c. 50-100 hairs/mm<sup>2</sup>], moderately glandular [c. 60-70 glands/

mm<sup>2</sup>]; *adaxial lobe* (2.1-)3.4-5.4 mm long, 3.4-6.5 mm wide [length to width ratio 0.6-1.2], outer surface sparsely to densely hairy [(8-)15-181 hairs/mm<sup>2</sup>], inner surface moderately glandular [c. 60-70 glands/mm<sup>2</sup>]; [adaxial lobe length to abaxial lobe length ratio 1.2-5]. *Corolla* with outer surface glabrous basally, sparsely to densely hairy distally [65-100 hairs/mm<sup>2</sup>], sparsely glandular [up to c. 17 glands/mm<sup>2</sup>]; *tube* 3.4-6.5 mm long; *abaxial median lobe* spatulate or very broadly to broadly obovate, 3.5-5.5 mm long, 2.7-5 mm wide [length to width ratio 1-1.3]. *Stamens* with anthers cristate dorsally; appendage terminating in 1- c. 3 narrowly triangular trichomes. *Ovary lobes* moderately to densely glandular distally.

*Selected specimens examined* (50 examined). NORTHERN TERRITORY: Central South: *Beaglehole* 20477, 10.x.1966, Reedy Rock Hole, George Gill Range (AD, MEL); *Beaglehole* 26754, 14.vii.1968, Penny Springs, George Gill Range (AD); *Chippendale* 6250, 24.vi.1959, Glen Edith (AD, BRI, MEL, NSW); *Latz* 276, 10.xii.1968, Kings Canyon (AD).

SOUTH AUSTRALIA: Northern Arid: Western Sandplains (Victoria Desert): *Perry* 5602, 28.i.1956, 18 miles S of Emu (AD, CANB); (Maralinga): *Turner* s.n., 13.xii.1959, c. 6 km N of Nawa (AD); (Giles): *Lothian* 3851, 29.v.1967, c. 55 km W of Tallaringa Well (AD); (Oolarinna): *S.A. Pastoral Board* s.n., 16.ix.1953, Wallatina (AD); (Illbillee): *Gilles* s.n., anno 1882, near Mt Everard (MEL). - Central Tablelands (Warrida): *S.A. Pastoral Board* s.n., 25.ix.1966, Commonwealth Hill (AD); (Breakaway): *Lazarides* 8250, 4.iv.1977, 8.5 km N of Lambina Homestead (AD); (Peake Creek): *Anon.* [*Helms*] s.n., 21.v.1891, Arckaringa Valley (NSW 128371 & 128372). - Western Pastoral: Gawler Uplands (Gawler): *Sullivan* s.n., s. dat., Gawler Ranges (MEL 43794); (Uno): *Mollenmans* 39, 8.iii.1981, Uno Homestead (AD). - Central Salt Lakes and Plateaux (Paltrubie): *Weber* 3266, 1.x.1972, Mt Sam (AD). - Kingoonya Plains and Dunes (Wallabyng): *Giles* s.n., anno 1880, Mt Eba (MEL 43897). - Great Victoria Desert (Ilkina): *Williams* 9138, 15.ii.1977, 17 km SE of Hiltaba Homestead (AD); (Yellabina): *Copley* 2671, 29.vii.1969, c. 3 km NNE of Ooldea (AD). - Eyre and Yorke Peninsulas: Northern Myall Plains (Lake Gilles): *Burkitt* s.n., s. dat., Lake Gilles (MEL 43797).

*Distribution.* Occurs in the Central South region of the Northern Territory, and the Northern Arid and Western Pastoral regions, plus Eyre Peninsula, of South Australia. Figure 11.

*Ecology.* Occurs in sandy soils, on sand plains, sand dunes or in interdunal areas, or on well-drained granitic loamy sands of stony hills, with *Acacia aneura*, *A. quadrimarginea*, *Aristida browniana*, *Eragrostis eriopoda*, *Eremophila* spp., *Triodia* sp. and *Thryptomene maisonewii*.

*Notes.* The diagnostic differences between this subspecies and ssp. *althoferi* are summarized in the 'Key to subspecies'. Refer to notes on the 'Incurved leaf' variant of *P. sericea* for comments on the relationship between this subspecies and that variant.

The three collections cited below (from Western Australia) have leaves which are very similar to those of ssp. *longifolia*.

*Pritzel* [? *Helms*] 843, -.x.1901, Coolgardie goldfields (AD, BR, E, GH, HBG, K, MEL, MO); *Weber* 5153, 16.x.1975, c. 65 km E of Morawa (AD, MEL, NSW); *Weber* 5186, 18.x.1975, c. 10 km E of Mouroubra Homestead (AD, MEL, NSW).

10. ***Prostanthera behriana*** Schldl., *Linnaea* 20: 610 (1847); Benth. in DC., *Prod.* 12: 700 (1848); Benth., *Fl. Austral.* 5: 102 (1870); Tate, *Trans. & Proc. Roy. Soc. S. Austral.* 3: 78 (1880); op. cit. 6: 145 (1883); op. cit. 8: 201 (1886); op. cit. 9: 279 (1887); op. cit. 12: 111 (1889); *Handb. Fl. Extratrop. S. Austral.* 151 & 252 (1890); J.M. Black, *Fl. S. Austral.* 3: 461 (1926); op. cit. 2nd edn, 4: 737 (1957); Lothian & Holliday, *Growing Austral. Pl.* 70 (1964); Althofer, *Cradle of Incense* 146, 150-153 (1978); Conn, in J. Jessop & H. Toelken (eds), *Fl. S. Austral.* 3: 1211 & 1212, fig. 555F (1986). *Type:* *Behr* s.n., -.xi.- [? 23.xi.1848, refer Kraehenbuehl (1981), p. 110], 'Im felsigen Querthale der Tonunda (Tanunda Creek), Sud-Australien', South Australia (holo: HAL).



Erect to straggling shrub, 1-2.5 m high. *Branches* ± terete, often laterally flattened and slightly grooved when young, densely hairy [c. 100-164 hairs/mm<sup>2</sup>], sometimes hairs restricted to base of leaf and midrib of adaxial surface; hairs ± straight, appressed, antrorse, 0.3-0.4 mm long; glands absent. *Leaves* light to mid-green, sparsely to densely hairy [up to c. 100 hairs/mm<sup>2</sup>], sometimes sparsely hairy adaxially, often glabrous abaxially; *petiole* absent; *lamina* obovate to narrowly ovate, (9.4-)14-26(-32) × 2.5(-6) mm [length to width ratio (4.2-)5-11, length of maximum width from base to total lamina length ratio 0.3-0.4], base attenuate to acute, margin entire and slightly incurved, apex subacute; venation (including midrib) indistinct. *Inflorescence* a frondose racemiform conflorescence, uniflorescence monadic; 2-14-flowered [per conflorescence]. *Pedicel* 0.5-1 m long, densely hairy [c. 100-184 hairs/mm<sup>2</sup>], hairs appressed, c. 0.5 mm long, glands absent; *prophylls* inserted on distal half of pedicel, often inserted near base of calyx [ $a_1$  axis to anthopodium ratio 1-6.5], opposite, narrowly ovate to narrowly obovate, 3-6 mm long, 0.5-1 mm wide [length to width ratio 3-6, length of maximum width from base to total lamina length 0.4-0.7], densely hairy basally, distally sparsely hairy or glabrous, or with a few hairs at the base, base obtuse to acute, margin entire, apex subacute. *Calyx* light green, glands absent, outer surface moderately to densely hairy [c. 50-134 hairs/mm<sup>2</sup>]; tube 2-3 mm long, inner surface glabrous; *abaxial lobe* depressed triangular, 1-1.4 mm long, 1.8-2.1 mm wide [length to width ratio 0.6-0.7], apex obtuse, sometimes slightly emarginate, inner surface glabrous at base, moderately to densely hairy distally [c. 60-80 hairs/mm<sup>2</sup>]; *adaxial lobe* depressed to very broadly ovate, 2.1-2.7 mm long, 3-3.3 mm wide [length to width ratio 0.7-0.8], apex obtuse, inner surface glabrous at base, moderately to densely hairy distally [60-80 hairs/mm<sup>2</sup>]; [adaxial lobe length to abaxial lobe length ratio 1.5-2.1]. *Corolla* 15-20 mm long, white, pale blue, pale violet, purple-white, with purple streaks in throat, or more commonly with brown-red dots in throat and mouth of abaxial surface, venation purple; outer surface glabrous at base, moderately to densely hairy distally [67-118 hairs/mm<sup>2</sup>], hairs c. 0.4 mm long, glands absent; inner surface glabrous at base, sparsely to moderately hairy distally, sometimes glabrous on distal parts of lobes [up to c. 60 hairs/mm<sup>2</sup>], glands absent; *tube* 7-10 mm long, diameter at mouth c. 5 mm; *abaxial median lobe* ± spatulate, 6-10 mm long, 4.5-9 mm wide [length to width ratio 1.1-1.3], apex rounded and ± irregular, bilobed (sinus 0.5-1.5 mm long, 2-4 mm wide distally); *lateral lobes* ± oblong, ovate to obovate, 5.5-7 mm long, 2.5-3 mm wide [length to width ratio 2.2-2.3], apex rounded, sometimes slightly emarginate; *adaxial median lobe-pair* very broadly ovate, 4-6 mm long, 6-7 mm wide [length to width ratio 0.7-0.9], apex rounded, deeply bilobed (sinus 2.5-3 mm long). *Stamens* inserted 5.5-6 mm above base of corolla; filaments 1-5 mm long, cristate dorsally, lobes with small basal acumen c. 0.1 mm long, connective extended to form a basal appendage c. 1 mm long, terminating in c. 5 triangular trichomes. *Disc* c. 0.5 mm high. *Pistil* 7-9 mm long; *ovary* cylindrical-ovoid, c. 0.5 mm long, diameter at base 0.4-0.6 mm, lobes 0.1-0.2 mm long, with minute pedicellate glands distally; style 6.5-7 mm long; *stigma lobes* up to 0.4 mm long. *Fruiting calyx* enlarged (abaxial lobe 2.4-2.7 mm long, 2-2.2 mm wide [length to width ratio 1.1-1.3]; [adaxial lobe length to abaxial lobe length ratio 1.8-2.1]). *Mericarps* 2-3 mm long, distally c. 1 mm extended beyond base of style, distal diameter c. 2 mm, with pedicellate glands distally; seeds ± ovoid, c. 1.5-2 mm long, 0.8-1 mm wide. Figure 5.

*Selected specimens examined (135 examined).* SOUTH AUSTRALIA: South East: Frances Plateau (Bangham): *Roach* 63, 21.xi.1970, c. 32 km S of Keith, near Willalooka Store (AD). - Murray Mallee: South-east Mallee Heathlands (Moorlands): *Sharrad* 283, 26.x.1959, 5 miles S of Cooke Plains (AD); (Wellington): *Black* s.n., 24.x.1906, near Wellington (AD); (Angas Plains): *Hunt* 3038, 20.ix.1969, Milang (AD); Northern Calcarenite Ridges and Plains (Jacks Hill): *Spooner* 4175, 24.iv.1975, eastern end of Weerumbrook Hill Range (AD). - Mt Lofty Block: Mid-North Wheatlands (Mt Remarkable): *Burbidge* (& *Gray*) 4092, 14.ix.1955, Alligator Creek Gorge (AD, CANB, MEL, NSW, PERTH); (Burra Hill): *Chinnock* 1317, 1318, 31.ix.1973, Black Springs Reserve (AD); Peninsula Uplands (Barossa): *Carrick* 2968, 26.x.1971, Bethany (AD); (Para): *Whibley* 3814, c. 5 km E of Tanunda (AD); (Mt Terrible): *Schodde* 1031,

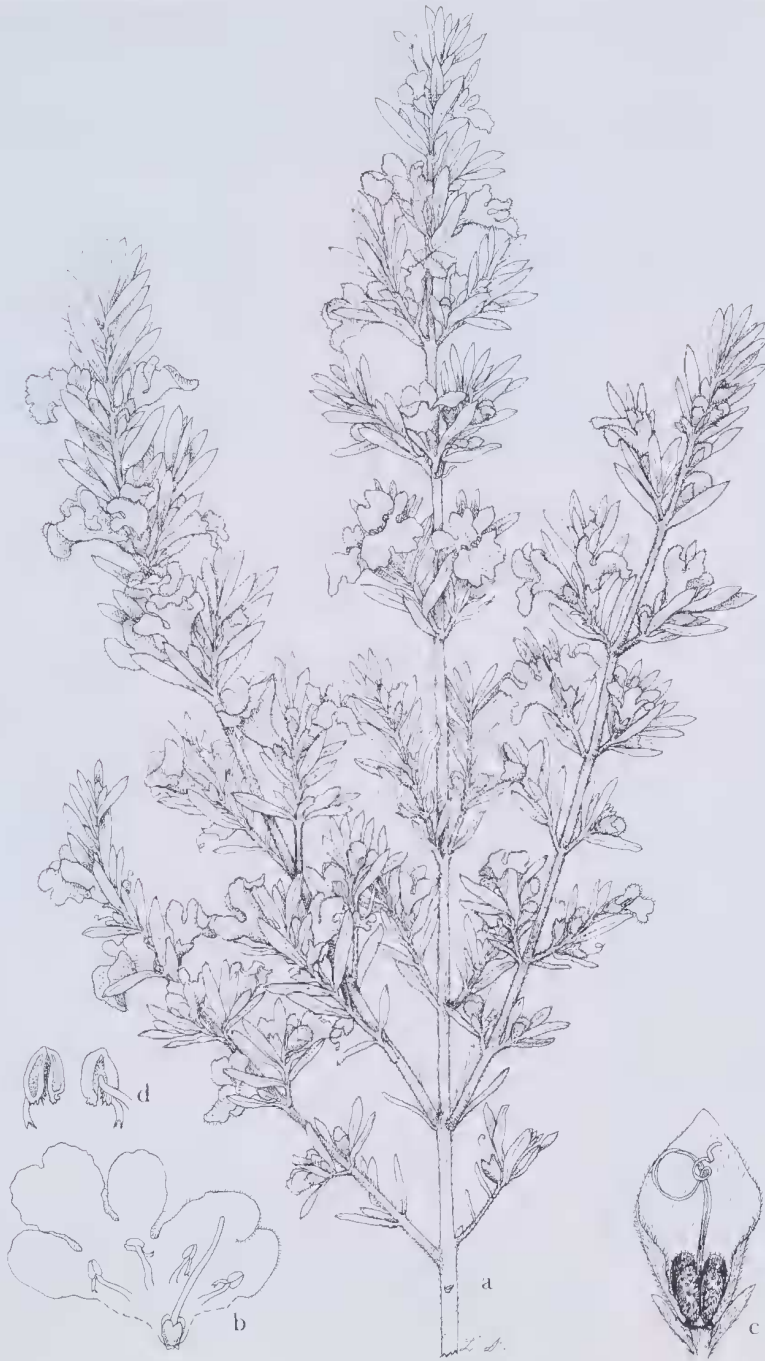


Figure 5. *Prostanthera behriana*. a - Twig and flowers. b - Open corolla. c - Calyx showing developing fruit. d - Stamens, ventral and dorsal views. (Carrick 2968).

25.xii.1958, Morialta Gorge (AD, CANB); (Sandergrove): *Conn* 689-691, 13.x.1979, Braeudler's Scrub, Monarto South (AD, MEL); (Clarendon): *Tepper* s.n., anno 1881, Clarendon (MEL); (Aldinga): *Whibley* 5825, 20.xii.1976, MacLaren Flat (AD).

*Distribution.* Endemic to South Australia. It occurs from the lower Flinders Ranges, throughout the Lofty Ranges [Mt Lofty Block (excluding Kangaroo Island)] to south of Keith [Murray Mallee (excluding Upper Murray Lands) and South East (Frances Plateau)]. Figure 14.

*Ecology.* Commonly associated with *Astroloma conostephioides*, *Baeckea*, *Brachycome*, *Correa*, *Hibbertia*, *Leptospermum* and *Styphelia* heathlands in sandy soils (particularly between sand ridges), podsolized sands and gravel. Also found with *Eucalyptus baxteri*, *E. fasciculosa*, *E. leucoxyloides*, *E. obliqua*, *Acacia pycnantha*, *Banksia marginata* and *Allocasuarina verticillata* woodland in loamy soils of granitic-gneiss rocky gullies.

*Notes.* Once recorded for Kangaroo Island [S.A. *White* s.n., -x.1906, Middle River (AD)]; however, the locality given for this collection appears to be incorrect.

This species has its closest affinities with *P. ammophila*. Refer 'Notes' for *P. ammophila* for discussion of differences between these two taxa.

*Conservation status.* Not considered to be endangered.

*Common name.* Behr's Mint Bush (Guilfoyle 1910, p. 302).

#### 11. *Prostanthera ammophila* Conn, sp. nov. (Figure 6a-c)

*P. sp. A* : Conn, in J. Jessop & H. Toelken (eds). Fl. S. Austral. 3: 1218 (1986).

Species nova Sectionis *Prostantherae*. Frutices 0.6-1.7 m alti. Rami et ramuli teretes usque subangulares, pilis densis vestita, argenteo-virides, pilis 0.5-0.7 mm longis, glandibus absentibus. Folia pilis densis vestita; petiolus absens; lamina ovata usque anguste elliptica, 7.2-13.3 mm longa, 2.5-5.5 mm lata, basi obtusa, margine integro et leviter incurvo, apice obtuso usque subacuto, interdum mucronato. Pedicellus florum 1-2.1 mm longus, pilis densis vestita, pilis 0.5-0.7 mm longis; prophyllis in dimidio distali pedicello affixis, anguste ovatis, anguste ellipticis usque linearibus, 3.8-8.1 mm longis, 0.4-1.1 mm latis. Calyx viridis cum purpureus usque malvinus suffusus; tubus 2.4-3.9 mm longus, extra pilis densis vestita, glandibus absentibus, interius glaber; lobus abaxialis depresso ovatus usque late ovatus, 1.9-3.5(-4.1) mm longus, (2.2-)2.5-3.7 mm latus, apice obtuso usque rotundato, saepe retuso, sinu usque ad circa 0.3 mm longo, extra pilis densis vestita, glandibus absentibus, interius pilis moderatis vestita; lobus adaxialis latissime ovatus, raro anguste ovatus, (3.4-)4-8.1 mm longus, (2.3-)4-7.4 mm latus, apice obtuso usque rotundato, extra pilis moderatis usque densis vestita, glandibus absentibus, interius pilis moderatis usque densis vestita. Corolla 13-15 mm longa, basaliter alba, alibi purpurea usque malvina, interdum rosea vel caerulea, cum lutea maculae in interius paginae abaxialis, extra pilis moderatis vestita, interius pilis sparsis vestita, glandibus absentibus; tubus 7-8.7 mm longus; lobus abaxiali-medianus spatulatus, 3-7 mm longus, 2.4-5.2 mm latus, apice obtuso, lobis lateralibus latissime ovatis usque ovatis vel oblongibus, 2.5-6 mm longis, 2.2-4.2 mm latis, apice obtuso, pari loborum adaxiali-mediano depresso ovato usque latissime ovato vel transverse late elliptico, 3-5.6 mm longo, 4.6-8.4 mm lato, apice irregulari et rotundato, bilobato, sinu 1.1-2.7 mm longo. Stamina 3.2-4.5 mm e basi corollae affixa; filamenta 2.5-4 mm longa; antherae 0.8-1.1 mm longae, appendice 0.6-1.6 mm longa. Pistillum 8-8.7 mm longum; ovarium circa 0.6 mm longum, glandibus distaliter; stylus 7.2-7.6 mm longus; lobis stigmatis 0.6-0.7 mm longis. Calyx fructus auctus. Mericarpia 2.5-3 mm longa, glandibus distaliter.

*Typus:* Donner 3388, 3.x.1969, c. 70 km SW of Yardea Homestead, South Australia (holo: MEL 665261; iso: AD, MEL 665260, NSW).



Erect to spreading shrub, 0.6-1.7 m high. *Branches* terete to subangular, densely hairy [112-204 hairs/mm<sup>2</sup>], appearing silver-green; hairs  $\pm$  straight to curled, subpatent to appressed, antrorse, 0.5-0.7 mm long, white; glands absent. *Leaves* silver-green to light green, abaxial surface paler than adaxial surface, densely hairy [129-204 hairs/mm<sup>2</sup>], hairs [as for branches], glands absent; *petiole* absent; *lamina* ovate to narrowly elliptic, 7.2-13.3  $\times$  2.5-5.5 mm [length to width ratio 2.1-3.7, length of maximum width from base to total lamina length ratio 0.3-0.6], base obtuse, margin entire and slightly incurved, apex obtuse to subacute, sometimes with a small blunt mucro; venation (including mid-rib) not visible. *Inflorescence* a frondose racemiform conflorescence, uniflorescence monadic; c. 6-12-flowered [per conflorescence]. *Pedicel* 1-2.1 mm long, densely hairy [133-208 hairs/mm<sup>2</sup>], hairs 0.5-0.7 mm long, glands absent; *prophylls* inserted on distal half of pedicel [a, axis to anthopodium ratio 1-3], opposite, narrowly ovate, narrowly elliptic to linear, 3.8-8.1 mm long, 0.4-1.1 mm wide [length to width ratio 5.1-18.1, length of maximum width from base to total lamina length ratio 0.3-0.5], densely hairy [as for leaves], base acute to subattenuate, margin entire, apex subattenuate. *Calyx* green with purple to mauve tinge; tube 2.4-3.9 mm long, outer surface densely hairy [(108-)141-196 hairs/mm<sup>2</sup>], glands absent, inner surface glabrous; *abaxial lobe* depressed ovate to broadly ovate, 1.9-3.5(-4.1) mm long, (2.2-)-2.5-3.7 mm wide [length to width ratio (0.4-)-0.6-1.2], apex obtuse to rounded, often retuse (sinus up to c. 0.3 mm long), outer surface densely hairy [95-175 hairs/mm<sup>2</sup>], glands absent, inner surface moderately hairy [c. 55 hairs/mm<sup>2</sup>]; *adaxial lobe* very broadly ovate to ovate (rarely narrowly ovate), (3.4-)4-8.1 mm long, (2.3-)4-7.4 mm wide [length to width ratio 0.7-2(-2.7)], apex obtuse to rounded, outer surface moderately to densely hairy [(54-)80-121 hairs/mm<sup>2</sup>], glands absent, inner surface moderately to densely hairy [61-120 hairs/mm<sup>2</sup>]; [adaxial lobe length to abaxial lobe length ratio 1.6-2.5]. *Corolla* 13-15 mm long, basal part of tube white, distally purple to mauve (sometimes predominately pink or blue), with yellow spots on inner abaxial surface of throat and base of abaxial median lobe, outer surface moderately hairy [c. 45 hairs/mm<sup>2</sup>], inner surface sparsely hairy [c. 15 hairs/mm<sup>2</sup>], glands absent; *tube* 7-8.7 mm long, diameter at mouth 4-5 mm; *abaxial median lobe* spatulate, 3-7 mm long, 2.4-5.2 mm wide [length to width ratio 0.8-1.8], apex slightly irregular and rounded; *lateral lobes* very broadly ovate to ovate or oblong, 2.5-6 mm long, 2.2-4.2 mm wide [length to width ratio (0.8-)1-1.7], apex obtuse; *adaxial median lobe-pair* depressed ovate to very broadly ovate or transversely broad elliptic, 3-5.6 mm long, 4.6-8.4 mm wide [length to width ratio 0.5-0.7], apex irregular and rounded, bilobed (sinus 1.1-2.7 mm long). *Stamens* inserted 3.2-4.5 mm above base of corolla; filaments 2.5-4 mm long, glabrous; anthers 0.8-1.1 mm long, connective extended to form a basal appendage 0.6-1.6 mm long, terminating in 2 or 3 narrowly triangular trichomes. *Disc* c. 0.2 mm high. *Pistil* 8-8.7 mm long; *ovary* cylindrical-obovoid, c. 0.6 mm long, diameter at base c. 0.7 mm, lobes 0.1-0.2 mm long, sparsely to moderately glandular distally; *style* 7.2-7.6 mm long; *stigma lobes* 0.6-0.7 mm long. *Fruiting calyx* enlarged (abaxial lobe 5-10 mm long, 6-9.5 mm wide [length to width ratio 0.8-1.3]; adaxial lobe 2.5-5.5 mm long, 3-5 mm wide [length to width ratio (0.6-)0.9-1.3]; [adaxial lobe length to abaxial lobe length ratio 0.4-0.7]). *Mericarps* 2.5-3 mm long, distally 1-1.5 mm extended beyond base of style, distal diameter 2-2.2 mm, distal half moderately to densely glandular [45-100 glands/mm<sup>2</sup>]; seeds ellipsoid-cylindrical, c. 1.5 mm long, c. 0.8 mm wide.

*Selected specimens examined (25 examined)*. SOUTH AUSTRALIA: Western Pastoral: Gawler Uplands (Gawler - Thurlga Station): *Copley* 2745, 1.viii.1969 (AD); *Warnes* s.n., 1.ix.1968 (AD); (Yellabina): *S.A. Pastoral Board* s.n., 3.x.1966, c. 30 km N of Koonibba (AD); Eyre and Yorke Peninsulas (Eyre Peninsula): Central Mallee Plains and Dunes (Kimba): *Rohrlach* 936, 28.x.1961, c. 15 km WNW of Kimba (AD); (Corrabinnie): *Weber* 7040, 8.x.1981, c. 20 km S of Paney Homestead (AD); (Koongawa): *Chinnock* 2905, 19.x.1975, 15 km NNE of Wallala Hill (AD); (Wirrula - Penong): *Kaspiew* 77, 20.xi.[(post 1946)] (S); *Kaspiew* 1125, 20.xi.-[post 1946] (BR); (Midgee): *Warnes* 8, 5.ix.1969, c. 48 km N of Cowell (AD); (Hambidge); *Kraehenbuehl* 2052, 8.x.1966, Hambidge Conservation Park (AD).

*Distribution*. Endemic to the Gawler Ranges (Gawler Uplands) and Eyre Peninsula (Central Mallee Plains and Dunes) of South Australia. Figure 12.

*Ecology.* Occurs on sand dunes in white sandy soil and in white sandy loam on rocky hills. It has been recorded as occurring with *Eucalyptus* spp.

*Notes.* This species has its closest affinities with *P. behriana* and to a lesser extent with *P. centralis*. It differs from *P. behriana* by having a smaller corolla (13-15 mm long cf. 15-20 mm long for *P. behriana*), an enlarged membranous fruiting calyx (the fruiting calyx remains more or less unchanged in *P. behriana*), and the hairs of the branches are longer (0.5-0.7 mm long cf. 0.3-0.4 mm long for *P. behriana*). *P. ammophila* differs from *P. centralis* by having the hairs of the branches and leaves more or less appressed and antrorse, whereas those of the latter species are more or less patent. Although there is considerable overlap in the range of leaf size for the two species, the leaves of *P. ammophila* tend to be smaller than those of *P. centralis*. *P. ammophila* has a style approximately 7.2-7.6 mm long (c. 8-10 mm long for *P. centralis*). The adaxial calyx lobe is shorter in *P. ammophila* (1.9-3.5(-4.1) mm long cf. 3.7-7 mm long in *P. centralis*).

*Conservation status.* Not known. However, it has been recorded as uncommon or rare by Copley 2745, Kraehenbuehl 2052, Warnes 153, and Weber 7020.

## 12. *Prostanthera centralis* Conn, sp. nov. (Figure 7b)

Species nova Sectionis *Prostantherae*. *Frutices* usque ad 1 m. alti. *Rami* et *ramuli* plus minusve teretes, dense hirsuti, pilis (0.1-)0.2-1.5 mm longis, glandibus hemisphaericis et interdum pedicellatus. *Folia* dense hirsuta; *petiolus* 0.5-1.5 mm longus; *lamina* ovata usque elliptica, 9-20(-27) mm longa, 4-9(-13) mm lata. basi rotundata usque subacuta, margine integro, apice minusve obtuso usque rotundato. *Pedicellus florum* 1.3-3.3 mm longus. dense plus minusve hirsutus, pilis circa 0.5 mm longis; *prophyllis* usque ad circa 1.5 mm e basi calycis affixis, anguste obovatis vel anguste ellipticis, 4-6 mm longis, 0.5-1 mm latis. *Calyx* prope basin viridis, alibi purpureo-viridis, extra pilis densis vestita et sparse usque moderate glandifer, interius pilis moderate vestita et sparse glandifer; *tubus* 2.5-5 mm longus; *lobus abaxialis* latissime ovato-circularis, 3-6 mm longus, 4-7 mm latus. apice rotundato; *lobus adaxialis* transverse ellipticus usque latissime ovato-subcircularis, 3.7-7 mm longus, 6-8(-11) mm latus, apice rotundato, leviter retuso. *Corolla* 11-16 mm longa, purpureo-caerulea usque caerulea, extra pilis sparsis usque densis vestita, interius pilis sparsissimis vestita; *tubus* 8-10.5 mm longus; *lobus abaxialimedianus* latissime ovato-subcircularis usque latissime subangulari-ovatus, 3-5 mm longus, 5-6 mm latus, apice obtuso, *lobis lateralibus* latissime ovato-subcircularis usque late ovatis, (circa 2.5-)4 mm longis. (2-)3 mm latis, apice obtuso, *pari loborum adaxialimediano* depresso ovato, circa 4 mm longo, 8 mm lato, apice rotundato et profunde bilobato, sinu usque ad 3 mm longo. *Stamina* 3-4 mm e basi corolla affixa; filamenta 5-7 mm longa; antherae 1-1.4 mm longae, appendice 1.8-2.5 mm longa. *Pistillum* 9-11 mm longum; ovarium 0.8-1 mm longum; stylus circa 8-10 mm longus; lobis stigmatibus 0.1-0.2 mm longis. *Calyx fructus* auctus. *Mericarpia* 2-2.5 mm longa.

*Typus.* Chinnock 510, 25.viii.1973, Dean Range, 6.5 km S of Docker River Settlement, Northern Territory (holo: MEL 641979; iso: AD).

Erect shrub or subshrub, up to 1 m high. *Branches* ± terete, densely hirsute [150-200 hairs/mm<sup>2</sup>]; hairs simple, unicellular (multicellular hairs rarely present), ± straight, ± patent, (0.1-)0.2-1.5 mm long, translucent to white; glands mostly ± hemispherical [up to c. 12 glands/mm<sup>2</sup>], some pedicellate glands usually present [15- c. 20 glands/mm<sup>2</sup>], pedicellate glands 0.3-0.8 mm long. *Leaves* densely hirsute [160-195 hairs/mm<sup>2</sup>]; hairs (0.1-)0.2-1.5 mm long; glands mostly ± hemispherical [20-25 glands/mm<sup>2</sup>], with occasional pedicellate glands present (particularly on petiole and lamina margin); *petiole* 0.5-1.5 mm long; *lamina* ovate to elliptic, 9-20(-27) × 4-9(-13) mm [length to width ratio (1.4-)1.6-2.2(-2.6), length of maximum width from base to total lamina length ratio 0.4-0.5], base rounded to subacute, margin entire, apex ± obtuse to rounded; venation faint to distinct, midrib raised on abaxial surface, veins slightly raised on abaxial surface, 2-4(-5) pairs. *Inflorescence* a frondose to frondo-subbracteose racemiform confluence, uniflorescence monadic; c. 16-46-flowered [per confluence]; distal leaves of confluence prophyll-like, basal ones similar to vegetative leaves, ±



Figure 6. a-c - *Prostanthera ammophila*. a - Twig and flowers. b - Calyx. c - Prophylls. (Donner 3388). d-f - *P. wilkieana*. d - Twig and flowers. e - Calyx. f - Prophylls. (Brockway s.n., 20.x.1947). g-i - *P. scutata*. g - Twig and flowers. h - Calyx. i - Prophylls. (Gardner 14266).



subangular-obovate to elliptic, 6-9 × 2-4 mm, purplish, becoming light green from apex to base, basal leaves of confluence light green throughout, indumentum similar to that of the vegetative leaves. *Pedicel* 1.3-3.3 mm long, densely hairy, hairs c. 0.5 mm long; *prophylls* inserted at base of calyx or up to c. 1.5 mm from distal end of pedicel, hence overlapping base of calyx [a, axis to anthopodium ratio up to 2], narrowly obovate or narrowly elliptic, 4-6 × 0.5-1 mm [length to width ratio 6-8, length of maximum width from base to total lamina length ratio 0.5-0.7], densely hairy, hairs c. 0.5 mm long, base narrowly cuneate, margin entire, apex obtuse. *Calyx* green basally, purple-green distally; outer surface densely hairy [83-134 hairs/mm<sup>2</sup>], hairs 0.2-0.4 mm long and 1.3-2 mm long, the longer hairs more abundant on basal half of calyx, sparsely to moderately glandular [3-20 glands/mm<sup>2</sup>], glands ± hemispherical; inner surface moderately hairy [40-50 hairs/mm<sup>2</sup>], hairs 0.3-0.7 mm long, mostly suberect; sparsely glandular [3-10 glands/mm<sup>2</sup>], glands ± hemispherical; *tube* 2.5-5 mm long; *abaxial lobe* very broadly ovate-circular, 3-6 mm long, 4-7 mm wide [length to width ratio 0.7-1], apex rounded; *adaxial lobe* transversely elliptic to very broadly ovate-subcircular, 3.7-7 mm long, 6-8 (-11) mm wide [length to width ratio (0.5-)0.9-1.2], apex rounded, slightly retuse (sinus c. 0.1 mm long), [adaxial lobe length to abaxial lobe length ratio 1.2-1.7]. *Corolla* 11-16 mm long, purplish-blue, mauve to blue; outer surface distally sparsely to moderately hairy [28-38 hairs/mm<sup>2</sup>], hairs 0.5-0.6 mm long; inner surface with a few scattered hairs [up to c. 10 hairs/mm<sup>2</sup>], hairs 0.1-0.2 mm long; *tube* 8-10.5 mm long; *abaxial median lobe* very broad, ovate-subcircular to subangular-ovate, 3-5 mm long, 5-6 mm wide [length to width ratio 0.6-0.8], apex emarginate (sinus c. 0.8 mm long); *lateral lobes* very broadly ovate-subcircular to broadly ovate (c. 2.5-)4 mm long, (2-)3 mm wide [length to width ratio c. 1.3], apex obtuse; *adaxial median lobe-pair* depressed ovate, c. 3.3-4 mm long, 6-8 mm wide [length to width ratio c. 0.5], apex rounded, bilobed or deeply emarginate (sinus up to 3 mm long), each half of lobe-pair very broadly ovate [length to width ratio c. 1] and each with an obtuse apex. *Stamens* inserted 3-4 mm above base of corolla; filaments 5-7 mm long, glabrous (rarely with an occasional hair); anthers 1-1.4 mm long, base of lobes with minute acumen up to c. 0.1 mm long, connective cristate (triangular trichomes up to c. 0.3 mm long) and extended to form 1 or 2 basal appendages 1.8-2.5 mm long, distal end of appendages with 1- c. 6 triangular trichomes (trichomes up to c. 0.3 mm long). *Disc* c. 0.5 mm high. *Pistil* 9-11 mm long; *ovary* 0.8-1 mm long; *style* c. 8-10 mm long; *stigma lobes* 0.1-0.2 mm long. *Fruiting calyx* enlarged (abaxial lobe 6.5-7 mm long, 9.4-9.8 mm wide [length to width ratio 0.7]; adaxial lobe 8.5-9 mm long, 11-12 mm wide [length to width ratio 0.8]; [adaxial lobe length to abaxial lobe length ratio 1.3]. *Mericarps* 2-2.5 mm long, distally 1.5 mm extended beyond base of style; seeds ± ellipsoid, c. 1 mm long, c. 0.8 mm wide.

*Specimens examined.* NORTHERN TERRITORY: Central South: *Basedow* 133, 1.vii.1926, Mt Unapproachable (K); *Butler* 91, -.iv.1967, Armstrong River, Petermann Range (PERTH); *Carolin* 5299, 18.viii.1966, Mt Phillips, Petermann Range (SYD); *Chinnock* 510, 25.viii.1973, Dean Range, 6.5 km S of Docker River Settlement (AD, MEL); *Chinnock* 536, 23.viii.1973, 9.6 km E. of Wallera Ranch (AD); *Henshall* 2767, 9.x.1979, Mannanana Range, Docker River area (AD); *Latz* 879, 29.x.1970, Bloods Range, 26 km NE of Docker River Settlement (AD, MEL, NT, PERTH); *Latz* 1753, 23.ix.1971, c. 35 km NW of Mt Olga (NT); *Latz* 2386, 10.iv.1972, Bloods Range (AD); *Latz* 8024, 10.ix.1978, Mannanana Range (AD).

WESTERN AUSTRALIA: Eremaean: Giles: *Carolin* 6181, 2.viii.1967, Trig Point on Rawlinson Range (K, NSW); *George* 8277, 3.x.1966, c. 32 miles W of Giles, Rawlinson Range (MEL, PERTH); *George* 8293, 3.x.1966, Pass of the Abencerrages, Rawlinson Range (MEL, PERTH); *George* 8311, 4.x.1966, Walter James Range (MEL, PERTH); *George* 8812, 20.vii.1967, Glen Helen, Rawlinson Range (PERTH); *Finlayson ex Herb. J.M. Black* s.n., -.ii.1935, Robert Range (AD 97337163); *Hill & Lothian* 843, 7.vii.1958, c. 4 miles N of Giles (AD, MEL).

*Distribution.* Northern Territory (south-western Central South region) and Western Australia (Eremaean Botanical Province: Giles District). Figure 12.

*Ecology.* Occurs in gravelly soils on quartzite scree slopes with *Triodia pungens*, *T. spicata*, *Plectrachne melvillei*, *Eucalyptus oxymitra* and *Acacia* spp.

*Notes.* This species has its closest affinities with *P. ammophila*. The differences between the two species are discussed under *P. ammophila*.

*Conservation status.* This species has been recorded as rare or infrequent (Latz 879, 1753, 2386 & 8024, and George 8812 ). Risk Code = 3K.

13. ***Prostanthera wilkieana*** F. Muell., *Fragm.* 8: 230 (1874); Tate, *Trans. & Proc. Roy. Soc. S. Austral.* 3: 78 (1880); *op. cit.* 12: 111 (1889); *Handb. Fl. Extratrop. Fl. S. Austral.* 150 & 252 (1890); F. Muell. & Tate, *Trans. & Proc. Roy. Soc. S. Austral.* 13: 104 (1890); Tate, in P. Spencer, *Rep. Horn Exped.* 3: 173 (III. 1896); F. Muell. & Tate, *Trans. & Proc. Roy. Soc. S. Austral.* 16: 374 (1896); Diels & Pritzel, *Bot. Jahrb.* 35: 526, t. 59 (1904); J. M. Black, *Fl. S. Austral.* 3: 491 (1926); C. A. Gardner, *Enum. Pl. Austral. Occid.* 114 (1931); J. M. Black, *Fl. S. Austral.* 2nd edn 4: 737 (1957); Blackall & Grieve, *W. Austral. Wildfl.* 3: 592 (1965); J. S. Beard, *Descr. Cat. W. Austral. Pl.* 94 (s. dat. [Oct. 1965]); Galbraith, *Wildfl. SE Austral.* 325 (1977); Althofer, *Cradle of Incease* 154, 156, 157 & 161 (1978); Grieve (ed.), Blackall & Grieve, *W. Austral. Wildfl.* 3B: 452 (1981); Haegi, in J. Jessop (ed.), *Fl. Central Austral.* 310 (1981) (p.p., incl. *P. althoferi* ssp. *longifolia*); Conn, in J. Jessop & H. Toelken (eds), *Fl. S. Austral.* 3: 1217 & 1218 (1986). *Lectotype* (here chosen): *E. Giles* s.n., s. dat. [18.ix.1873-(?)22.xi.1873 (interpolated from diary of Giles 1875)], between Mt Olga and Barrow Range, Northern Territory (lecto: MEL 43805 - lower right specimen; isolecto: MEL 43805 - upper left and centre specimens, MEL 43806).

Erect, densely branched shrub, 0.3-1.2 m high. *Branches* ± terete, densely hairy [91-200(-283) hairs/mm<sup>2</sup>], appearing silvery, silver-green or grey-green; hairs curled to almost straight, subappressed (especially the shorter hairs) to almost patent, antrorse to retrorse (indumentum appearing scruffy), 0.2-2.1 mm long (short and long hairs usually present on the same branch), white; glands absent. *Leaves* silvery, silver-green or grey-green, densely hairy, rarely moderately hairy [(58-)91-235 hairs/mm<sup>2</sup>], hairs [as for branches], glands absent; *petiole* absent; *lamina* elliptic, obovate to narrowly elliptic, narrowly obovate or ± narrowly oblong, (2.8-)4-10(-16) × 1.3-5.4 mm [length to width ratio 1.5-4.7, length of maximum width from base to total lamina length ratio 0.4-0.8], base attenuate, margin entire and often slightly incurved, apex obtuse or sometimes rounded; venation not visible, midrib sometimes faint (on abaxial surface). *Inflor-escence* a frondose racemiform confluence, uniflorescence monadic; 8-14-flowered [per confluence]. *Pedicel* 1.1-3.3 mm long, densely hairy [117-274 hairs/mm<sup>2</sup>], hairs 0.2-1.8 mm long, glands absent; *prophylls* inserted on distal half of pedicel [a<sub>1</sub> axis to anthopodium ratio 1.4-5], opposite, narrowly obovate to linear, 1.1-4.6 mm long, 0.2-0.5(-0.9) mm wide [length to width ratio (2.9-)3.7-7(-9.7), length of maximum width from base to total lamina length ratio 0.3-0.8], densely hairy [as for leaves], base attenuate, margin entire and often incurved, apex obtuse to subattenuate. *Calyx* silvery-green; *tube* 2.6-4.3 mm long, outer surface densely hairy [116-241 hairs/mm<sup>2</sup>], glands absent, inner surface glabrous, rarely sparsely glandular; *abaxial lobe* depressed-ovate to broadly ovate, or depressed angular-ovate to broadly angular-ovate, (2.2-)3.6-6.5 mm long, (3.9-)4.2-7.5 mm wide [length to width ratio 0.6-1.1], margin entire or ± trilobed distally, apex obtuse, outer surface densely hairy [(115-)120-231 hairs/mm<sup>2</sup>], glands absent, inner surface densely hairy [121-228 hairs/mm<sup>2</sup>]; *adaxial lobe* depressed ovate to very broadly ovate, (1.3-)2.2-3.6(-4.3) mm long, 2.1-4(-5.2) mm wide [length to width ratio 0.6-0.9], apex obtuse to rounded, outer surface densely hairy [(115-)123-222 hairs/mm<sup>2</sup>], glands absent, inner surface densely hairy [114-220 hairs/mm<sup>2</sup>]; [adaxial lobe length to abaxial lobe length ratio 0.4-0.6(-0.9)]. *Corolla* 7.5-17 mm long, mauve to pale violet or white (sometimes pale blue), with deep purple streaks in throat and a few dull yellow to yellow-brown spots on inner surface of abaxial median lobe, outer surface sparsely hairy [10-23 hairs/mm<sup>2</sup>], inner surface sparsely hairy [25-42 hairs/mm<sup>2</sup>], lobes usually more densely hairy than tube, glands absent; *tube* 3.3-7.5(-10.4) mm long,

diameter at mouth 4-5.5 mm; *abaxial median lobe* ± spatulate, (2.1-)3-6(-7.8) mm long, (1.7-)3-6.4(-7.8) mm wide [length to width ratio 0.9-1.6], apex irregular and bilobed (sinus 1-c. 3 mm long); *lateral lobes* broadly ovate to ovate or oblong, often broadly angular-obovate, 2-5.2 mm long, 1.3-4.7 mm wide [length to width ratio 1.2-2.6], apex obtuse; *adaxial median lobe-pair* depressed obovate, depressed ovate to broadly elliptic or broadly obovate, (1.8-)2.9-6.6 mm long, (2.7-)3.5-5.6(-9) mm wide [length to width ratio 0.5-1.3], apex rounded to sometimes obtuse, often slightly irregular, bilobed (sinus 0.7-1.4 mm long). *Stamens* inserted (1.6-)2.7-4(-4.5) mm above base of corolla; filaments 2-3.3 mm long, glabrous; anthers 0.9-2.2 mm long, connective extended to form a basal appendage (0.2-)0.4-1.3 mm long, terminating in 1-3 narrowly triangular trichomes. *Disc* up to 0.6 mm high. *Pistil* 2.2-5 mm long; *ovary* ± spherical to ± cylindrical, 0.4-0.5 mm long, diameter at base 0.6-1 mm, lobes up to c. 0.2 mm long, glabrous, often very sparsely glandular distally; *style* 2.5-6 mm long, glabrous, rarely with a few scattered glands; *stigma lobes* 0.3-0.8 mm long. *Fruiting calyx* enlarged (abaxial lobe 2.6-5.9 mm long, 3.5-6.5 mm wide [length to width ratio 0.6-1]; adaxial lobe 6.2-11.8 mm long, 6.9-11.8 mm wide [length to width ratio 0.9-1.2]; [adaxial lobe length to abaxial lobe length ratio 1.4-2.5]). *Mericarps* 1.5-2 mm long, distally 0.2-0.3 mm extended beyond base of style, distal diameter 2.2-2.4 mm, distally sparsely to moderately glandular [up to c. 80 glands/mm<sup>2</sup>]; seeds ellipsoid-cylindrical, c. 1.5 mm long, c. 0.6 mm wide. Figure 6d-f.

*Selected specimens examined* (42 examined). NORTHERN TERRITORY: Central South: *Latz* 2340, 8.iv.1972, W of Lake Hopkins (AD); *Latz* 5725, 22.ix.1974, SW of Mt Olga (AD, MEL).

SOUTH AUSTRALIA: Northern Arid: Western Sandplains (Mt Sir Thomas): *Helms* s.n., 7.vii.1891, Camps 15 & 16, near Mt Watson (AD); *Helms* s.n., 30.vi.1891, Camp 12, 80 km WNW of Mt Lindsay (AD, K. MEL, NSW); *Helms* s.n., s. dat. [-vi-vii.1891 (interpolated from Lindsay 1893)], Camps 11 & 15, near Mt Watson (AD 96909002); (Okaranga): S.A. *Pastoral Board* s.n., 25.ix.1955, Mt Moulden (AD).

WESTERN AUSTRALIA: Eremaean (Carnegie): *Burbidge* 1236, 6.x.1960, 24 miles NE of Mt Charles (CANB); *Chinnock* 791, 5.ix.1973, 8 km NE of Paddy's Bore, Yelma Station (AD, MEL, NSW, PERTH); *George* 8163, 68 miles SW of Warburton Mission (AD, KP, MO, PERTH); (Helms): *George* 8385, 10.x.1966, 1 mile W of Neale Junction (PERTH); (Keartland): *De Graff* 110, 27.i.1969, Pierre Springs (PERTH); (Fortescue): *Lullfitz & Fairall* L2566, 12.x.1963, 640 miles [from Perth], N of Meekatharra (KP); (Ashburton): *Bennett* 99, -.vii.1941, Princess Ranges (PERTH); (Austin): *Aplin* 2464, 23.viii.1963, 8 km E of Meekatharra (BRI, PERTH); *Conn* 2077a, 11.ix.1985, c. 10 km NW of the Mullewa to Gascoyne Junction road on road to Woodleigh Station (CANB, MEL, MO, PERTH); *Conn* 2103, 12.ix.1985, c. 23 km W of the Mullewa to Gascoyne Junction road on road to Woodleigh Station (KUN, MEL, MO, PERTH).

*Distribution*. Occurs in the Central South region of the Northern Territory, the Northern Arid (Western Sandplains) of South Australia, and the Eremaean Botanical Province (Ashburton, Austin, Carnegie, Fortescue & Helms Districts) of Western Australia. Figure 13.

*Ecology*. Occurs in spinifex sandplain communities, in the interdunal area in red sand with *Acacia coriacea*, *A. ligulata*, *A. salicina*, *Eremophila platythamos*, *Eucalyptus gongylocarpa* and *Triodia basedowii*. Also occurs near watercourses, often in *Plectrachne* spp. grasslands (*Burbidge* 1236, *George* 8163). Once recorded as occurring on lateritic stony rises (*Chinnock* 791).

*Typification*. The herbarium sheet MEL 43805 contains five specimens and one envelope of fragments. The herbarium label (in Mueller's hand) corresponds with the locality details in the protologue ('Inter montem Olgae et tractum Barrow's Range; E. Giles', Mueller 1874, p. 230). There is close agreement between the description provided in the protologue and the lower right specimen of this sheet which has well preserved flowers and fruits.

*Notes*. This species has close affinities with *P. ammophila* (S. Australia) and *P. scutata* (W. Australia). The indumentum of *P. ammophila* is made up of antrorse hairs which are mainly appressed, some subpatent hairs are present (hairs 0.5-0.7 mm long). The



hairs of *P. wilkieana* vary from subappressed to almost patent, and antrorse to retrorse, such that the indumentum appears scruffy (particularly on older branches). The subappressed hairs of this species are less than 0.5 mm long, whereas the subpatent to almost patent hairs are 1-2.1 mm long. In *P. ammophila* and *P. scutata* the hairs are all approximately the same length. The hairs of *P. scutata* are appressed to subpatent, antrorse to retrorse, 0.3-0.6 mm long, and much of the indumentum (particularly on the leaves) is made up of  $\pm$  strongly curled hairs. In *P. wilkieana* and *P. ammophila* the hairs on the leaves are  $\pm$  straight for most of their length.

The leaves are basally attenuate in *P. wilkieana*, but obtuse in *P. ammophila* and attenuate to acute in *P. scutata*. The prophylls of *P. wilkieana* tend to be shorter, with a smaller length to width ratio than those of *P. ammophila* (1.1-4.6 mm long [length to width ratio (2.9-)/3.7-7(-9.7)] cf. *P. ammophila* 3.8-8.1 mm long [length to width ratio 5.1-18.1]). The prophylls of *P. scutata* are similar to those of *P. wilkieana*.

The style length is also useful in distinguishing between these three species (*P. ammophila* — 2.5-6 mm long; *P. scutata* — 14.5-15.7 mm long; *P. wilkieana* — 7.2-7.6 mm long).

*De Graaf* 110 records that this species is eaten by kangaroos.

*Conservation status.* Not considered to be endangered.

*Common name.* One Aboriginal name (of unknown language group) for this species is 'Nyil-Nyil' (*de Graaf* 110).

14. ***Prostanthera scutata*** C.A. Gardner, J. Roy. Soc. W. Austral. 47: 63 (1964); Blackall & Grieve, W. Austral. Wildfl. 3: 593 (1965); J.S. Beard, Descr. Cat. W. Austral. Pl. 94 (s. dat. [Oct. 1965]); Althofer, Cradle of Incense 154 & 159 (1978); Grieve (ed.), Blackall & Grieve, W. Austral. Wildfl. 3B: 452 (1981). *Type:* Gardner 14266, 19.xii.1962, 'ad fontem flumen Hutt' (holo: PERTH).

Erect compact shrub, 0.2-0.3 m high. *Branches* terete, densely hairy [141-233 hairs/mm<sup>2</sup>], appearing dull grey-green; hairs slender, weak,  $\pm$  straight to loosely curled (particularly on distal 1-3 internodes), loosely appressed to subpatent, antrorse to retrorse, 0.3-0.6 mm long, white; sparsely glandular [4-13 glands/mm<sup>2</sup>] or glands absent. *Leaves* grey-green, moderately to densely hairy, hairs  $\pm$  tightly curled, sparsely glandular [4-31 glands/mm<sup>2</sup>] or rarely with glands absent; *petiole* 0.3-1.8(-2.4) mm long, densely hairy [137-275 hairs/mm<sup>2</sup>], sparsely glandular [4.2-16.7 glands/mm<sup>2</sup>] or glands absent; *lamina* broadly elliptic (almost subcircular) to narrowly elliptic, sometimes narrowly obovate, 1.6-11.1 x 1.1-6.8 mm [length to width ratio 1.1-3, length of maximum width from base to total lamina length ratio 0.4-0.7]; [petiole length to lamina length ratio 0.07-0.4], moderately to densely hairy [66-164 hairs/mm<sup>2</sup>], sparsely glandular [3-27 glands/mm<sup>2</sup>] or glands absent, base attenuate (sometimes abruptly so) to acute, margin entire, apex obtuse to rounded; venation not visible, midrib sometimes faint on abaxial surface. *In-florescence* a frondose racemiform confflorescence, uniflorescence monadic; 6- c . 20-flowered [per confflorescence]. *Pedice*l 1.3-2.6 mm long, densely hairy [166.7-292 hairs/mm<sup>2</sup>]; hairs c. 0.4 mm long; sparsely glandular [4.2-16.7 glands/mm<sup>2</sup>] or glands absent; *prophylls* inserted on distal half of pedicel [a, axis to anthopodium ratio 1.1-7.7], opposite, narrowly obovate to linear, 1.3-4.2 mm long, 0.2-0.7 mm wide [length to width ratio 6.2-12.4, length of maximum width from base to total lamina length ratio 0.6-0.7], densely hairy [as for leaves], base attenuate, margin entire and often slightly incurved, apex obtuse. *Calyx* probably dull grey-green; *tube* 2.5-4 mm long, outer surface densely hairy, rarely moderately hairy [(54-)100-171 hairs/mm<sup>2</sup>], hairs mostly strongly curled, 0.1-0.4 mm long, sparsely to moderately glandular [12.5-50 glands/mm<sup>2</sup>], inner surface glabrous; *abaxial lobe* very broadly ovate to ovate, rarely depressed ovate, (1.5-)2-4.4 mm long, 2.6-4.2 mm wide [length to width ratio (0.4-)0.9-1.3], apex obtuse (rarely rounded), outer surface sparsely to densely hairy [21-139.5 hairs/mm<sup>2</sup>], hairs mostly strongly curled [as for calyx tube], sparsely glandular [c. 20-25 glands/mm<sup>2</sup>]; *adaxial lobe* depressed ovate to broadly ovate, (2.5-)4-8.5 mm long, 4.4-8.1 mm wide [length to width ratio 0.6-1.2], apex  $\pm$  trilobed, outer surface moderately to densely hairy [83-140.7 hairs/

mm<sup>2</sup>], hairs mostly strongly curled [as for calyx tube], sparsely to moderately glandular [as for calyx tube], inner surface densely hairy [100-140.5 hairs/mm<sup>2</sup>], sparsely to moderately glandular (as for calyx tube); [adaxial lobe length to abaxial lobe length ratio 1.2-2]. *Corolla* 12-20 mm long, pale blue to faintly violet, outer surface moderately hairy [c. 100 hairs/mm<sup>2</sup>], hairs tightly curled, 0.1-0.4 mm long, longer on margin of lobes, inner surface glabrous, glands absent; tube 14-15 mm long, diameter at mouth 4-7 mm; *abaxial median lobe* spatulate or obvate, 3.4-6 mm long, 3-4.7 mm wide [length to width ratio 0.7-1.3], apex slightly irregular and rounded, often retuse (sinus up to c. 0.9 mm long); *lateral lobes* very broadly ovate to broadly ovate or broadly oblong, 2.3-4.3 mm long, 3.2-4.7 mm wide [length to width ratio 0.6-1.3], apex obtuse; *adaxial median lobe-pair* depressed ovate to very broadly obvate, 2.2-5 mm long, 5-8.2 mm wide [length to width ratio 0.4-0.7], apex slightly irregular and rounded, bilobed (sinus 0.8-2.6 mm long). *Stamens* inserted 4.8-6.5 mm above base of corolla; filaments (4.5-)8-9.5 mm long, glabrous; anthers 1.2-1.7 mm long, lobes cristate on basal dorsal surface and basally with small acumen, connective basally extended to form a basal appendage 0.7-1.4 mm long, distally tapering into a narrowly triangular trichome. *Disc* c. 1 mm high. *Pistil* 16-17.5 mm long; *ovary* cylindrical-obovoid, c. 0.6-0.7 mm long, diameter at base c. 0.8 mm, lobes 0.1-0.2 mm long, moderately to densely glandular throughout; *style* 14.5-15.7 mm long, moderately to densely glandular basally; *stigma lobes* 0.4-0.6 mm long. *Fruiting calyx* enlarged (abaxial lobe 6-9.5 mm long, 6-7 mm wide [length to width ratio 0.9-1.4]; adaxial lobe 12-16.5 mm long, 10-15 mm wide [length to width ratio 1-1.2]); [adaxial lobe length to abaxial lobe length ratio 1.6-2.5]). *Mericarps* 2.5-2.6 mm long, surface often becoming irregularly 3-ribbed when mature, distally 0.7-0.9 mm extended beyond base of style, distal diameter c. 3.6 mm, moderately to densely glandular throughout [100-117 glands/mm<sup>2</sup>]; seeds ± ellipsoid, c. 1.3 mm long, c. 0.5 mm wide. Figure 6g-i.

*Specimens examined.* WESTERN AUSTRALIA: South-West (Irwin): *Beard & Lullfitz* L34, anno 1961, Wilroy (PERTH); *Gardner* 12069, 5.i.1959, Yuna (PERTH); *Gardner* 14266, 19.xii.1962, Hutt River (PERTH - Type); *George* 16408, 19.x.1984, on the Coonawa Road, c. 30 km (by road) E of Yuna (PERTH); *Lullfitz* L2994, 14.xi.1963, Wilroy (KP); *Lullfitz* L4581, 8.xii.1965, Wilroy (KP); *Rogerson* s.n., -x.1961, Wilroy Siding (PERTH).

*Distribution.* Endemic to the South-West Botanical (Irwin) province of Western Australia. Figure 13.

*Ecology.* Occurs 'in gravelly sand on disturbed road verge' (*George* 16408).

*Notes.* This species has close affinities with *P. wilkieana* (refer 'Notes' under this latter species for details).

*Conservation status.* Very rare and probably endangered (Risk Code = 3E, (Conn in Leigh et al. 1981, pp. 49 & 73; Leigh et al. 1984, pp. 238 & 239). For further details refer Leigh et al. (1984). Attempts to recollect this species from the same locality as that of *George* 16408 were unsuccessful. It appears that this population no longer exists.

### 15. *Prostanthera splendens* Conn, sp. nov. (Figure 7c)

Species nova Sectionis *Prostantherae*. *Frutices* 0.4-0.5 m alti. *Rami* et *ramuli* teretes, pilis moderatis vestita, pilis 0.1-0.3 mm longis, glandibus moderatis usque densis vestita. *Folia* pilis dissitis vestita, glandibus sparsis usque densis vestita; *petiolus* absens vel usque ad 0.6 mm longus; *lamina* transverse elliptica vel transverse ovata usque transverse late elliptica vel transverse late ovata, 3.5-6 mm longa, 6-8 mm lata, basi rotundata usque truncata, margine integro et valde recurvato, apice late rotundato. *Pedicellus florum* 2-2.8 mm longus, pilis sparsis usque moderatis vestita, pilis 0.1-0.3 mm longis; *prophyllis* 0.4-0.5 mm e basi calycis affixa, obovatis usque anguste obovatis, 2-4 mm longis, circa 1 mm latis. *Calyx* probabiliter viridis cum purpureo suffusus, extra glaber vel pilis dissitis vestita, glandibus moderatis vestita, interius glaber, glandibus moderatis vestita; *tubus* 4.3-4.7 mm longus; *lobus abaxialis* depresso ovatus usque late ovatus, 3.2-4.3 mm longus, 4-5 mm latus, apice obtuso usque rotundato; *lobus adaxialis*



Figure 7. a - *Prostanthera petrophila*. Twig and flowers (Gardner 2530). b - *P. centralis*. Twig and flowers (Chinnock 510). c - *P. splendens*. Twig and flowers (Newbey 8541).



depressa ovatus, 3.6-4 mm longus, 6.3-6.5 mm latus, apice rotundato. *Corolla* 10-15 mm longa, pallida purpurea, cum purpurea maculae in interius paginae abaxialis, extra glabra vel pilis moderatis vestita, glandibus moderatis vestita, interius pilis moderatis vestita, glandibus absentibus; *tubus* 8.5-9.8 mm longus; *lobus abaxiali-medianus* spathulatus vel latissime obovatus usque late obovatus, 4-5.6 mm longus, 3-5.2 mm latus, apice rotundato, retuso, sinu usque ad circa 0.9 mm longo, *lobis lateralibus* late ovatis usque late ellipticis, 3.3-4.9 mm longis, 2.9-4 mm latis, apice obtuso, *pari loborum adaxiali-mediano* depresso ovato usque latissime ovato, 4.2-6.5 mm longo, 4.9-8.7 mm lato, apice leviter irregulari et rotundato, bilobato, sinu 2-3.5 mm longo. *Stamina* 6.5-7 mm e basi corollae affixa; filamenta 2.6-5 mm longa; antherae 1.2-1.5 mm longae, appendice 1-1.5 mm longa. *Pistillum* 10.2-11 mm longum; ovarium circa 0.7 mm longum; stylus circa 9.5 mm longus; lobis stigmatis circa 0.8 mm longis. *Calyx fructus* leviter auctus. *Merica* circa 2.3 mm longa, glandibus absentibus.

*Typus*: Newbey 8541, 16.viii.1981, 30 km E of Widgiemooltha (holo: MEL 1552699; iso: AD, MEL 630298, NSW, PERTH).

Small spreading shrub, 0.4-0.5 m high. *Branches* terete, moderately hairy [26-50 hairs/mm<sup>2</sup>], hairs  $\pm$  straight, subpatent, 0.1-0.3 mm long, multicelled, moderately to densely glandular [46-77 glands/mm<sup>2</sup>]. *Leaves* bright mid-green, abaxial surface paler than adaxial surface, aromatic abaxial surface with an occasional hair at base and on midrib, densely glandular (glands touching each other) [80-90 glands/mm<sup>2</sup>], adaxial surface glabrous, sparsely glandular [up to c. 20 glands/mm<sup>2</sup>]; *petiole* absent or up to 0.6 mm long; *lamina* transversely elliptic or transversely ovate to transversely broad-elliptic or transversely broad-ovate, 3.5-6  $\times$  6-8 mm [length to width ratio 0.5-0.8, length of maximum width from base to total lamina length 0.4-0.5], base rounded to truncate, margin entire and strongly recurved, apex broadly rounded; venation faint to indistinct on abaxial surface, midrib faint and slightly raised on abaxial surface. *Inflorescence* a frondose racemiform corymbose, uniflorescence monadic; 4-10-flowered [per corymbose]. *Pedice* 2-2.8 mm long, sparsely to moderately hairy [up to c. 55 hairs/mm<sup>2</sup>], hairs  $\pm$  straight, subpatent, 0.1-0.3 mm long, multicelled, moderately to densely glandular [60-85 glands/mm<sup>2</sup>]; *prophylls* inserted 0.4-0.5 mm from base of calyx [*a*<sub>1</sub> axis to anthopodium ratio 3-4.2], opposite, obovate to narrowly obovate, 2-4 mm long, c. 1 mm wide [length to width ratio 2-4, length of maximum width from base to total lamina length ratio 0.7-0.8], glabrous, sparsely to moderately glandular [up to c. 37 glands/mm<sup>2</sup>], base attenuate, margin entire, apex obtuse. *Calyx* green with purple tinge distally and on adaxial part of tube or maroon throughout; outer surface glabrous or with a few hairs at base and/or on margin of lobes, moderately glandular [30-42 glands/mm<sup>2</sup>]; inner surface glabrous, moderately glandular basally [c. 25 glands/mm<sup>2</sup>], glands also present near margin; *tube* 4.3-4.7 mm long; *abaxial lobe* depressed to broadly ovate, 3.2-4.3 mm long, 4-5 mm wide [length to width ratio 0.6-1], apex obtuse to rounded; *adaxial lobe* depressed ovate, 3.6-4 mm long, 6.3-6.5 mm wide [length to width ratio c. 0.6], apex rounded; [adaxial lobe length to abaxial lobe length ratio 0.9-1.1]. *Corolla* 10-15 mm long, tube and lobes mauve to light purple, inner surface of tube paler than outer surface, inner abaxial surface of tube and base of abaxial median lobe with mauve to red-brown dots; outer surface glabrous or moderately hairy [up to c. 42 hairs/mm<sup>2</sup>], hairs c. 0.2 mm long, moderately glandular distally [30-50 glands/mm<sup>2</sup>] (lobes densely glandular in bud); inner surface glabrous basally, moderately hairy in mouth and base of lobes [50-63 hairs/mm<sup>2</sup>], glands absent; *tube* 8.5-9.8 mm long, diameter at mouth 4.3-4.6 mm; *abaxial median lobe* spatulate or very broadly to broadly obovate, 4-5.6 mm long, 3-5.2 mm wide [length to width ratio 0.9-1.6], apex rounded and retuse (sinus up to c. 0.9 mm long); *lateral lobes* broadly oblong to broadly elliptic, 3.3-4.9 mm long, 2.9-4 mm wide [length to width ratio 1.1-1.2], apex obtuse; *adaxial median lobe-pair* depressed to very broadly ovate, 4.2-6.5 mm long, 4.9-8.7 mm wide [length to width ratio 0.6-1.1], apex slightly irregular and rounded, bilobed (sinus 2-3.5 mm long). *Stamens* inserted 6.5-7 mm above base of corolla; filaments 2.6-5 mm long, glabrous; anthers 1.2-1.5 mm long, not cristate dorsally, connective extended to form a basal appendage 1-1.5 mm long, terminating in several ( $\pm$  10) narrowly triangular trichomes. *Disc* 0.9-1 mm high. *Pistil* 10.2-11 mm long; *ovary* c. 0.7 mm long, diameter at base c. 1 mm, lobes c. 0.2 mm long, smooth, glands absent; *style* c. 9.5 mm long; *stigma lobes* c. 0.8 mm long. *Fruiting calyx* slightly

enlarged (abaxial lobe 5-5.7 mm long, 4-5 mm wide [length to width ratio 1.1-1.3]; adaxial lobe 6-7.5 mm long, 5.5-7 mm wide [length to width ratio c. 1.1]; [adaxial lobe length to abaxial lobe length ratio 1.2-1.3]). *Mericarps* c. 2.3 mm long, distally 1-1.1 mm extended beyond base of style, distal diameter c. 2.5 mm, smooth, glands absent; seeds ellipsoid, c. 1.3 mm long, c. 0.7 mm wide.

*Specimens examined.* WESTERN AUSTRALIA: Eremaean (Coolgardie): 1.ix.1985, 30 km E of Coolgardie to Esperance Highway, on road to Binneringie Homestead: *Conn* 1898 (MEL, NSW, PERTH); *Conn* 1899 (BRI, MEL, MO, NSW, PERTH); *Conn* 1900 (MEL, CANB); *Conn* 1901 (MEL); *Conn* 1902 (MEL); *Conn* 1903 (AD, MEL); *Conn* 1904 (MEL, NSW, PERTH); *Newbey* 8541, 16.viii.1981, 30 km E. of Widgiemooltha [same locality as *Conn* 1898-1904] (AD, MEL, NSW, PERTH - Type).

*Distribution.* Endemic to the Eremaean Botanical Province (Coolgardie District) of Western Australia. Figure 13.

*Ecology.* Occurs in 'well-drained, stony loam [soils, on a] moderately exposed rim of breakaway... in *Eucalyptus stricklandii* Open Low Woodland' (*Newbey* 8541).

*Notes.* Most readily distinguished by the transversely elliptic or transversely ovate leaves which have strongly recurved margins.

*Conservation status.* Only known from the type locality. *Newbey* records that its distribution is 'scattered in patches' (*Newbey* 8541). Risk Code = 1K.

#### 16. *Prostanthera petrophila* Conn, sp. nov. (Figure 7a)

Species nova Sectionis *Prostantherae*. Frutices 0.6-1.5 m alti. Rami et ramuli teretes usque subangulares, pilis densis vestita, pilis circa 0.2 mm longis, glandibus absentibus. Folia glabra vel pilis sparsissimis vestita; petiolus absens vel 0.6-1 mm longus; lamina anguste obovata, 8.5-14 mm longa, 2-3 mm lata, basi attenuata et decurrenti, margine integro, apice obtuso usque rotundato. Pedicellus florum 2-2.3 mm longus, pilis densis vestita, pilis circa 0.2 mm longis, glandibus absentibus; prophyllis anguste ovatis usque linearibus, 0.5-0.8 mm longis, 0.1-0.2 mm latis. Calyx dilutus viridis; extra glaber vel pilis sparsissimis vestita ad basim, glandibus absentibus; interius pilis moderatis usque densis vestita distaliter, glandibus absentibus; tubus 2-4 mm longus; lobus abaxialis depresso ovatus, 1-1.4 mm longus, 3-3.3 mm latus, apice rotundato, raro emarginato; lobus adaxialis depresso ovatus usque latissime ovatus, 3.1-3.6 mm longus, 5-5.2 mm latus, apice obtuso. Corolla 5-6 mm longa, alba, striae fauci et lobis violaceae; extra glabra, interdum pilis prope marginem et apicem loborum, glandibus absentibus; interius glabra basaliter, pilis sparsis usque moderatis vestita distaliter, glandibus absentibus; tubus 4-5 mm longus; lobus abaxiali-medianus spatulatus, 4.2-5 mm longus, 2.2-4 mm latus, apice rotundato, lobis lateralibus ovatis usque oblongis, 4.3-5 mm longis, 2.5-3.5 mm latis, apice obtuso usque rotundato, pari loborum adaxiali-mediano latissime obovato, 5-6 mm longo, 7-7.8 mm lato, apice rotundato et bilobato, sinu 3-3.5 mm longo. Stamina circa 3.5 mm e basi corollae affixa; filamenta 2.5-3 mm longa; antherae 0.9-1 mm longae, appendice absentia. Pistillum 5.5-6 mm longum; ovarium circa 0.4 mm longum, glabrum; stylus 4.5 mm longus; lobis stigmatibus 0.5-0.6 mm longis. Calyx fructus auctus. Mericarpi 1.8-2 mm longa, glabra.

*Type:* *Gardner* 2530, 23.viii.1931, Mt Barloweerie, Western Australia (holo: PERTH - lower left specimen; iso: K, PERTH - upper right specimen).

Spreading shrub, 0.6-1.5 m high. Branches terete to subangular, very densely hairy [150- c. 300 hairs/mm<sup>2</sup>], hairs ± straight, appressed, antrorse, c. 0.2 mm long; glands absent. Leaves glabrous or very sparsely hairy (usually more densely hairy on petiole) [up to c. 18.5 hairs/mm<sup>2</sup>]; with a few scattered glands; petiole absent or 0.6-1 mm long; lamina narrowly obovate, 8.5-14 × 2-3 mm [length to width ratio 3-7, length of maximum width from base to total lamina length ratio 0.5-0.8], base attenuate and decurrent (hence petiole often appearing absent), margin entire, apex obtuse to rounded; venation (including midrib) not visible. Inflorescence a frondose racemiform conflorescence,

uniflorescence monadic, sometimes with 1 accessory bud; c. 10-16-flowered [per conflorescence]. *Pedicele* 2-2.3 mm long, densely hairy [150-200 hairs/mm<sup>2</sup>]; hairs c. 0.2 mm long; glands absent; *prophylls* inserted on basal half of pedicel [a<sub>1</sub> axis to anthopodium ratio 0.4-1.2], opposite, narrowly ovate to linear, 0.5-0.8 mm long, 0.1-0.2 mm wide [length to width ratio 4-7, length of maximum width from base to total lamina length ratio 0.2-0.4], *prophylls* not contracted at base, margin entire, apex obtuse, with a few scattered hairs. *Calyx* ? light green; outer surface glabrous, except for an occasional hair at base, glands absent; inner surface glabrous on basal half of tube, moderately hairy in mouth, moderately to densely hairy on abaxial lobe and basal half of adaxial lobe [90-100 hairs/mm<sup>2</sup>], glands absent; *tube* 2-4 mm long; *abaxial lobe* depressed ovate, 1-1.4 mm long, 3-3.3 mm wide [length to width ratio 0.3-0.4], apex rounded, rarely emarginate (sinus up to 0.3 mm long); *adaxial lobe* depressed to very broadly ovate, 3.1-3.6 mm long, 5-5.2 mm wide [length to width ratio 0.6-0.7], apex obtuse; [adaxial lobe length to abaxial lobe length ratio 2.2-3]. *Corolla* 5-6 mm long, white, with violet striations in throat and on lobes; outer surface glabrous, sometimes with an occasional hair near margin and apex of lobes, glands absent; inner surface glabrous on basal part of tube, sparsely hairy in throat, moderately hairy in mouth and on lobes [58-86 hairs/mm<sup>2</sup>], hairs weak and loosely tangled, 0.4-0.7 mm long, glands absent; *tube* 4-5 mm long, diameter at mouth 2.5-3 mm; *abaxial median lobe* spatulate, 4.2-5 mm long, 2.2-4 mm wide [length to width ratio 1.3-1.5], apex rounded; *lateral lobes* ovate to oblong, 4.3-5 mm long, 2.5-3.5 mm wide [length to width ratio 1.4-1.7], apex obtuse to rounded; *adaxial median lobe-pair* very broadly obovate, 5-6 mm long, 7-7.8 mm wide [length to width ratio 0.7-0.9], apex rounded and deeply bilobed (sinus 3-3.5 mm long). Stamens inserted c. 3.5 mm above base of corolla; filaments 2.5-3 mm long, glabrous; anthers 0.9-1 mm long, not cristate, lobes with small basal acumen c. 0.1 mm long, connective not extended, hence appendage absent. *Disc* c. 0.4 mm high. *Pistil* 5.5-6 mm long; *ovary* obovoid, c. 0.4 mm long, diameter at base 0.6-0.8 mm, lobes less than 0.1 mm long, glabrous; *style* 4.5 mm long; *stigma lobes* 0.5-0.6 mm long. *Fruiting calyx* enlarged (abaxial lobe 2-2.2 mm long, 4.2-4.6 mm wide [length to width ratio c. 0.5]; adaxial lobe 5.9-6.2 mm long, 6.6-7.2 mm wide [length to width ratio 0.8-0.9]; [adaxial lobe length to abaxial lobe length ratio 2.8-3.1]). *Mericarps* 1.8-2 mm long, distally 0.6-0.7 mm extended beyond base of style, distal diameter 2-2.5 mm, glabrous, ± smooth; seeds cylindrical-ellipsoid, c. 1.3 mm long, c. 0.5 mm wide.

*Specimens examined.* WESTERN AUSTRALIA: Eremaean (Austin): *Gardner* 2530, 23.viii.1931, Mt Barloweerie (K, PERTH - Type); (?*Gardner* &) *Blackall* 511, 23.viii.1931, hills between Murgoo and Wooleen Station (PERTH); *Wittwer* W.1265, 1.viii.1974, Cue (KP).

*Distribution.* Endemic to the Eremaean Botanical Province (Austin District) of Western Australia. Figure 12.

*Ecology.* Occurs on laterite mesa - derived soils with *Acacia* sp. (*Wittwer* W.1265), and 'in rock crevices' (*Gardner* 2530).

*Notes.* This species has close affinities with *P. campbellii*. Both species have similar indumentum on the inner surface of the corolla, anthers which are not cristate and which lack an appendage, and a white corolla which has purple/violet striations. *P. petrophila* differs from *P. campbellii* by having narrowly obovate leaves (length to width ratio 3-7) whereas the latter species has linear leaves (length to width ratio 13.9-39), and the *prophylls* only have an occasional hair in *P. petrophila*, but are moderately to densely hairy in *P. campbellii*.

*Conservation status.* Not known.

17. ***Prostanthera eurybioides*** F. Muell., *Defn Austral. Pl.* 15 & 16 (June-July [Seberg 1986] 1855); *Trans. Phil. Soc. Victoria* 1: 48 & 49 (Sept. 1855); *J. Bot. Kew Gard. Misc.* 8: 168 (1856); *Fragm.* 6: 105 (1867); *Benth., Fl. Austral.* 5: 105 (1870); *Tate, Trans. & Proc. Roy. Soc. S. Austral.* 3: 78 (1880); *op. cit.* 12: 111 (1889); *Handb. Fl. Extratrop. Fl. S. Austral.* 150 (1890); *J.M. Black, Fl. S. Austral.* 3: 491 (1926); *op. cit.* 2nd edn 4: 738



(1957); Althofer, *Cradle of Incense* 146, 148, 150-153 (1978). *Lectotype* (here chosen): *Mueller* s.n., -x.1848, 'In arenosis inter frutices inter flumen Murray [?] & montem Barkeri (Murray Shrub [?'Scrub']) (lecto: MEL 43158). *Possible other syntype*: *Mueller* s.n., s.dat., 'Murray Scrub' (MEL 43157) [refer Typification].

Low spreading shrub, less than 1 m high, diameter c. 1 m. *Branches* = terete, densely hairy [c. 100 hairs/mm<sup>2</sup>], more densely hairy from one leaf axil region to the next more distal nodal region between the opposite leaf bases [up to c. 350 hairs/mm<sup>2</sup>], hairs curled, 0.1-0.2 mm long. *Leaves* clustered on short shoots, thick, glabrous or sparsely hairy [15-35 hairs/mm<sup>2</sup>], sparsely glandular [15-50 glands/mm<sup>2</sup>], strongly scented when crushed; *petiole* absent or up to 0.1 mm long; *lamina* elliptic to ovate, (1.5-)2-2.5 × (0.6-)1-2(-2.2) mm [length to width ratio (1.1-)1.5-2.5, length of maximum width from base to total lamina length ratio 0.2-1], base obtuse to rounded, margin entire, apex obtuse; venation (including midrib) not visible. *Inflorescence* a frondose racemiform conflorescence (leaves of inflorescence with bases ± cuneate to rounded), uniflorescence monadic; (6-)12-14-flowered [per conflorescence]. *Pedicel* 0.5-1.3 mm long, moderately hairy [30-67 hairs/mm<sup>2</sup>], hairs 0.2-0.3 mm long, sparsely to moderately glandular [16-30(-50) glands/mm<sup>2</sup>]; *prophylls* inserted on distal half of pedicel, often near base of calyx [a, axis to anthopodium ratio (1.3-)2.5-8], overlapping basal part of calyx, opposite, narrowly elliptic, 1.3-1.7 mm long, (0.2-) c. 0.5 mm wide [length to width ratio 2.5-3.4(-7), length of maximum width from base to total lamina length ratio 0.4-0.5], sparsely to moderately hairy [16-66 (c. 100) hairs/mm<sup>2</sup>] or hairs restricted to margin, hairs c. 0.1 mm long, sparsely glandular [16-33 glands/mm<sup>2</sup>], base ± attenuate, margin entire and ± straight, apex obtuse to subrounded. *Calyx* midgreen with a red tinge on the distal parts of the tube, or maroon tinge distally (especially on lobes): outer surface with an occasional hair present [c. 3 hairs/mm<sup>2</sup>], hairs c. 0.1 mm long, moderately glandular [10-23 glands/mm<sup>2</sup>], glands ± hemispherical; margin of lobes with hairs present; inner surface glabrous, glands absent; *tube* 2.5-3 mm long; *abaxial lobe* very broadly ovate to very broadly oblong, 1.7-3.1 mm long, 2.3-3.5 mm wide [length to width ratio 0.6-0.9], apex rounded to subtruncate, often slightly undulate and/or slightly irregular, sometimes re-tuse (sinus up to c. 0.2 mm long); *adaxial lobe* depressed ovate, 1.5-2.2 mm long, c. 2.5-3.9 mm wide [length to width ratio 0.6], apex rounded, [adaxial lobe length to abaxial lobe length ratio 0.6-0.8]. *Corolla* 10-12 mm long, violet to midpurple, inner abaxial surface of mouth and distal part of tube white with mid-brown to light orange (or yellow) dots present (often in 4 irregular rows), laterally with numerous small dark purple dots; outer surface glabrous, or with an occasional hair near margin of lobes, sparsely glandular [up to c. 1 gland/mm<sup>2</sup>]; inner surface glabrous; *tube* 6-7 mm long, diameter at mouth c. 4 mm; *abaxial median lobe* spatulate, 2.6-4.8 mm long, 3.9-4.7 mm wide (2-2.9 mm wide at base) [length to width ratio 0.6-1.1], apex rounded and slightly irregular, emarginate (sinus 0.5- c. 1 mm long); *lateral lobes* ovate to broadly ovate, 4-6 mm long, 3-3.5 mm wide [length to width ratio c. 1-2], contracted basally (1-2 mm wide at base), apex subtruncate and irregular; *adaxial median lobe-pair* depressed ovate, 3-6 mm long, 6.8-11.7 mm wide [length to width ratio c. 0.5], apex irregular and rounded, emarginate to almost bilobed (sinus 0.7-2.6 mm long). *Stamens* inserted 2.5-4.6 mm above base of corolla; filaments 3.3-5.5 mm long, glabrous; anthers 1-2 mm long, purple laterally, base of lobes with a minute acumen less than 0.1 mm long, connective cristate (triangular trichomes c. 0.1 mm long), extended to form a basal appendage 0.6-0.8 mm long, distal end of appendage with c. 6-12 triangular trichomes 0.1-0.2 mm long. *Disc* c. 0.5 mm high. *Pistil* 5-7 mm long; *ovary* cylindrical-obovoid, 0.4-0.9 mm long, diameter at base 0.5 mm, lobes c. 0.1-0.2 mm long; *style* c. 4-6 mm long; *stigma lobes* 0.4-0.5 mm long. *Fruiting calyx* not or only slightly enlarged (abaxial lobe 2.6-3.3 mm long, 2.3-3.9 mm wide [length to width ratio 0.9-1.1]; adaxial lobe 1.6-2.5 mm long, 3.4-3.5 mm wide [length to width ratio 0.5-0.7]); [adaxial lobe length to abaxial lobe length ratio 0.6-0.8]. *Mericarps* 1-2.4 mm long, distally c. 0.4-1.2 mm extended beyond base of style, distal diameter 1.5-1.9 mm; seeds flattened ellipsoid-cylindrical, c. 1.6 mm long, c. 0.6 mm wide. Figure 8a-e.

*Selected specimens examined* (49 examined). SOUTH AUSTRALIA: Murray Mallee: Northern Calcarene Ridges and Plains (Keith): *Crisp* s.n., -viii.1973, Mt Monster (AD); *Kraehenbuehl* 217, 1.x.1960, near Mt Monster (AD, MEL); (Pallamana): *Barker*

et al. 4091, 10.viii.1980, Preamimma Creek (AD); *Carrick* 3311, s. dat., 6.5 miles W of Murray Bridge (AD, MEL); *Carrick* 3373, 22.vii.1973, 5 miles W of Murray Bridge towards Kinchina (AD, MEL); *Conn* 2458 & 2459, 30.ix.1985, Preamimma Creek (MEL). - Mt Lofty Block: Peninsula Uplands (Sandergrove): *Ising & Rothe* s.n., 24.x.1919, (probably N of) Monarto South (AD 97650190); (Hahndorf): *Mueller* s.n., s. dat. (? -x.1848), near Mt Barker (MEL 43156); [*Adelaide University*] *Student* s.n., -ix.1938, Mt Barker (AD 96911062).

*Distribution.* Endemic to the Murray Mallee and the Mt Lofty Block provinces of South Australia. Figure 12.

*Ecology.* It occurs amongst rocky granite outcrops near Mt Monster, and amongst *Eucalyptus* - mallee woodlands on sandy loam soils with granite outcrops in the Kinchina/Preamimma Creek area.

*Typification.* The lectotype (*Mueller* s.n., -x.1848 (MEL 43158)) of *P. eurybioides* is morphologically in close agreement with the protologue (*Mueller* 1855a). However, the locality details of this specimen are slightly at variance with that given in the protologue (namely, 'In the Mallee Scrub towards the mouth of the Murray River' (*Mueller* 1855a, p. 49)).

*Notes.* Although *Mueller* and an Adelaide University student collected this species from Mt Barker it is not to be found there today. However, it is possible that they used 'Mt Barker' to refer to a much broader area, which may have included the Kinchina/Preamimma area.

The small leaves are unusual for species of this Section. They are reminiscent of those of *P. serpyllifolia* ssp. *microphylla* (Section *Klanderia*, refer *Conn* 1984).

*Conservation status.* Only known from a few scattered localities and only a few plants are known in each area. It is endangered (Risk Code = 2E (*Conn* in *Leigh* et al. 1981, pp. 49 & 86; *Leigh* et al. 1984, pp. 237 & 238)) since it occurs in areas which are intensively cultivated and is not included in any conservation reserves. If the planned development of Monarto South had proceeded, the small population in that area would have been destroyed. For further details refer *Leigh* et al. (1984).

The Black Hill Native Flora Research Unit of the South Australian National Parks and Wildlife Service have developed a technique for tissue culture of this species, as well as conventional cutting propagation. They plan to reintroduce propagated plants to selected localities to supplement remnant populations (*Williams*, pers. comm 1984).

### 18. *Prostanthera nanophylla* Conn, sp. nov. (Figure 8f)

Species nova Sectionis *Prostantherae*. *Frutices* circa 0.1-1 m alti. *Rami* et ramuli plus minusve teretes, pilis sparsis usque densis vestita, pilis 0.1-0.3 mm longis, glandibus moderatis vestita. *Folia* glabra vel pilis sparsissimis vestita, glandibus moderatis vestita; *petiolus* absens vel usque ad circa 0.4 mm longus; *lamina* ovata vel elliptica usque anguste oblonga, 1.3-4.6 mm longa, 0.7-1.4 mm lata, basi breviter attenuata usque obtusa, margine integro, apice obtuso usque subrotundato. *Pedicellus florum* 1.2-1.3 mm longus, pilis moderatis usque densis vestita, pilis circa 0.1 mm longis; *prophyllis* e tertio distali pedicello affixis, anguste ellipticis usque anguste obovatis, vel subrhombicis usque ovatis, (1.4-)2-4.3 mm longis, 0.4-0.9 mm latis. *Calyx* viridis; tubus 1.3-2.3 mm longus, extra pilis sparsis vestita, glandibus moderatis vestita, interius pilis absens, glandibus sparsis vestita; *lobus abaxialis* late oblongus, 2.9-3.9 mm longus, 2.5-3.4 mm latus, apice rotundato et saepe leviter retuso, extra pilis sparsis usque moderatis vestita, glandibus moderatis vestita, interius pilis sparsis vestita, glandibus sparsissimis vestita; *lobus adaxialis* depresso ovatus usque latissime ovatus, 3.2-4.6 mm longus, 5.7-6.5 mm latus, apice irregulari usque leviter trilobato, extra pilis sparsissimis vestita, glandibus moderatis vestita, interius pilis sparsis vestita, glandibus sparsissimis vestita. *Corolla* 8-14 mm longa, caerulea usque alba, cum probabiliter aurantiaca usque brunnea vel purpurea maculae in interius paginae abaxialis, extra basaliter pilis absens, alibi pilis

sparsis vestita, glandibus sparsis vestita, interius pilis moderatis usque densis vestita, glandibus sparsis vestita; *tubus* 7.4-10.1 mm longus; *lobus abaxiali-medianus* late obovatus usque obovatus vel subspathulatus, 5.9-7.1 mm longus, 4.2-5.5 mm latus, apice irregulari et rotundato, retuso, sinu 0.6-0.8 mm longo, *lobis lateralibus* latissime ovatis usque ovatis vel oblongibus, 2.6-4.6 mm longis, 2.2-3.6 mm latis, apice rotundato, *pari loborum adaxiali-mediano* depresso ovato, 2.6-3.1 mm longis, 6-7.8 mm latis, apice irregulari et rotundato, saepe retuso usque bilobato, sinu usque ad circa 2 mm longo. *Stamina* circa 3 mm e basi corollae affixa; filamenta 2.9-4.6 mm longa; antherae 0.8-1 mm longae, appendice 0.8-0.9 mm longa. *Pistillum* circa 8 mm longum; ovarium circa 1.3 mm longum, glandibus distaliter; stylus circa 6.8 mm longus; lobis stigmatis circa 0.5 mm longis. *Calyx fructus* auctus. *Mericarpi*a non visus.



Figure 8. a-e - *Prostanthera eurybioides*. a - Twig and flowers. b - Detail of branchlet. c - Open corolla. d - Open calyx showing gynoecium. e - Stamens, ventral and dorsal views. (Ising s.n.). f - *P. nanophylla*. Twig and flowers (B. Smith 189).



*Typus:* Weber 5220, 20.x.1975, c. 27 km W of Koorda along the Rabbit Proof Fence, Western Australia (holo: MEL 1552759; iso: AD 97548059, CANB, K, MEL 1552760, MO, NSW, PERTH).

Small shrub, c. 0.1-1 m high. *Branches* ± terete, laterally compressed distally, sparsely to densely hairy [26-113 hairs/mm<sup>2</sup>]; hairs straight to curled, subpatent, antrorse to retrorse, 0.1-0.3 mm long, white; moderately glandular [36-58.3 glands/mm<sup>2</sup>]. *Leaves* clustered on short axes and arranged (unclustered) along long axes, green, glabrous or with a few scattered hairs (especially on margin); hairs usually curled, c. 0.1 mm long; moderately glandular [c. 50-63 glands/mm<sup>2</sup>]; *petiole* absent or up to c. 0.4 mm long; *lamina* ovate or elliptic to narrowly oblong, 1.3-4.6 × 0.7-1.4 mm [length to width ratio 1.2-3.3, length of maximum width from base to total lamina length ratio 0.3-0.5], base shortly attenuate to obtuse, margin entire, apex obtuse to subrounded; venation not visible, midrib sometimes faint basally. *Inflorescence* a frondose racemiform conflorescence, uniflorescence monadic; 6-10-flowered [per conflorescence]. *Pedicel* 1.2-1.3 mm long, moderately to densely hairy [50-100 hairs/mm<sup>2</sup>], hairs c. 0.1 mm long, moderately glandular [33-67 glands/mm<sup>2</sup>]; *prophylls* inserted on distal third of pedicel, usually near base of calyx [a<sub>1</sub> axis to anthopodium ratio 8.5-50], opposite, narrowly elliptic to narrowly obovate, or subrhombic to ovate (with distinct petiole - Wrigley CBG 31054), (1.4-)2-4.3 mm long, 0.4-0.9 mm wide [length to width ratio (1.6-)7.2-9.8, length of maximum width from base to total lamina length ratio 0.4-0.7], moderately to densely hairy [50-100 hairs/mm<sup>2</sup>], moderately glandular [33-67 glands/mm<sup>2</sup>], base attenuate (obtuse when subrhombic to ovate), margin entire, apex obtuse. *Calyx* green to maroon; *tube* 1.3-2.3 mm long, outer surface sparsely hairy [23-26 hairs/mm<sup>2</sup>], moderately glandular [32-65 glands/mm<sup>2</sup>], inner surface glabrous, sparsely glandular [c. 16 glands/mm<sup>2</sup>]; *abaxial lobe* broadly oblong, 2.9-3.9 mm long, 2.5-3.4 mm wide [length to width ratio c. 1.2], apex rounded, often slightly retuse, outer surface sparsely to moderately hairy (more densely hairy near and on margin) (24-38 hairs/mm<sup>2</sup>), moderately glandular [c. 33-37 glands/mm<sup>2</sup>], inner surface sparsely hairy [16-20 hairs/mm<sup>2</sup>], very sparsely glandular [up to c. 0.5 glands/mm<sup>2</sup>]; *adaxial lobe* depressed to very broadly ovate, 3.2-4.6 mm long, 5.7-6.5 mm wide [length to width ratio 0.5-0.8], apex irregular to slightly 3-lobed, outer surface with a few scattered hairs, moderately glandular [c. 37 glands/mm<sup>2</sup>], inner surface sparsely hairy [c. 22 hairs/mm<sup>2</sup>], very sparsely glandular [3-4 glands/mm<sup>2</sup>]; [adaxial lobe length to abaxial lobe length ratio 1-1.3]. *Corolla* 8-14 mm long, mauve, blue to white, inner surface with ? orange to dull brown, maroon or purple spots on abaxial surface; outer surface glabrous basally, sparsely hairy distally [16-20 hairs/mm<sup>2</sup>], with a few scattered glands; inner surface moderately to densely hairy [35-126 hairs/mm<sup>2</sup>], with an occasional gland; *tube* 7.4-10.1 mm long, diameter at mouth 4-5 mm; *abaxial median lobe* broadly obovate to obovate or subspathulate, 5.9-7.1 mm long, 4.2-5.5 mm wide [length to width ratio 1.2-1.5], apex slightly irregular and rounded, retuse (sinus 0.6-0.8 mm long); *lateral lobes* very broadly ovate to ovate or oblong, 2.6-4.6 mm long, 2.2-3.6 mm wide [length to width ratio 0.8-1.4], apex rounded; *adaxial median lobe-pair* depressed ovate, 2.6-3.1 mm long, 6-7.8 mm wide [length to width ratio c. 0.4], apex irregular and rounded, often retuse to deeply bilobed (sinus up to c. 2 mm long). *Stamens* inserted c. 3 mm above base of corolla; filaments 2.9-4.6 mm long, glabrous; anthers 0.8-1 mm long, lobes with small basal acumen c. 0.2 mm long, cristate dorsally (not always conspicuous), connective extended to form a basal appendage 0.8-0.9 mm long, terminating in 1 or 2 narrowly triangular trichomes. *Disc* c. 0.3 mm high. *Pistil* c. 8 mm long; *ovary* ± cylindrical to cupiform, c. 1.3 mm long, diameter at base c. 1.3 mm, lobes c. 0.1 mm long, densely glandular distally; *style* c. 6.8 mm long; *stigma lobes* c. 0.5 mm long. *Fruiting calyx* enlarged (abaxial lobe 4 mm long, 4 mm wide [length to width ratio 1]); adaxial lobe c. 8 mm long, c. 11 mm wide [length to width ratio 0.7]); [adaxial lobe length to abaxial lobe length ratio 0.5]. *Mericarps* immature.

*Specimens examined.* WESTERN AUSTRALIA: Eremaean (Coolgardie): *Beard* 5172, 23.x.1967, 10 miles E of Southern Cross (KP); *Conn* 2230, 18.ix.1985, No. 2 Rabbit Proof Fence road junction with Cadoux-Koorda road (MEL); *Smith* 527, 6.xi.1984, 23.5 miles SE of Marvel Loch, on Mt Day Road (CBG, HO, MEL, PERTH). - South-West (Avon): *Smith* 189, 21.x.1982, No. 2 Rabbit Proof Fence on Cadoux to Koorda Road (MEL,

NSW, PERTH); *Weber* 5220, 20.x.1975, c. 27 km W of Koorda along Rabbit Proof Fence (AD, MEL - Type); (Roe): *Wrigley* CBG 31053 & CBG 31054, 10.xi.1968, 6 miles from Hyden towards The Hump (AD). - Locality Unknown: *Rosier* 422, -.x-xi.1963, 52 miles from Rabbit Proof Fence [probably near Koorda] (PERTH).

*Distribution.* Endemic to the Eremaean Botanical Province (Coolgardie District) and South-West Botanical Province (Avon & Roe Districts) of Western Australia. Figure 11.

*Ecology.* 'On yellow sand over laterite' (*Smith* 189), associated with 'Mallee, *Acacia*, *Grevillea* scrub' (*Smith* 527). Also grows in 'disturbed roadside verge in sandy soil' (*Conn* 2230).

*Notes.* The small leaves of this species, which are often clustered on short axes, readily distinguish it from the other Western Australian species of *Prostanthera* section *Prostanthera*. Vegetatively, this species is similar to *P. serpyllifolia* (section *Klanderia*, refer *Conn* 1984).

*Conservation status.* Not known. *Conn* 2230 records only one plant seen and *Smith* 189 records eight plants seen. However, *Smith* 527 notes that it is 'plentiful'.

19. ***Prostanthera striatiflora*** F. Muell., *Linnaea* 25: 425 (1852); Walpers, *Ann. Bot. Syst.* 5: 701 (1858); F. Muell., *Rep. Pl. Babbage's Exped.* 15 (1859); *Ann. Rep.* 1862-63, 14 (1863); *Fragm.* 6: 106 (1868); Benth., *Fl. Austral.* 5: 103 (1870) (p.p. included *P. lithospermoides*); F. Muell., *Fragm.* 9: 162 (1875); Tate, *Trans. & Proc. Roy. Soc. S. Austral.* 3: 78 (1880); Kemp, *Trans. & Proc. Roy. Soc. S. Austral.* 3: 136 (1880); Moore, *Cens. Pl. New S. Wales* 53 (1884); Woolls, *Pl. New S. Wales* 83 (1885); Cleland, *Trans. & Proc. Roy. Soc. S. Austral.* 10: 79 (1888); Tate, *Trans. & Proc. Roy. Soc. S. Austral.* 11: 98 (1889); *op. cit.* 12: 111 (1889); *Handb. Fl. Extratrop. S. Austral.* 150 & 252 (1890); F. Muell. & Tate, *Trans. & Proc. Roy. Soc. S. Austral.* 13: 104 (1890); Moore, *Handb. Fl. New S. Wales* 352 (1893); Tate, in P. Spencer, *Rep. Horn Exped.* 3: 173 (III 1896); F. Muell. & Tate, *Trans. & Proc. Roy. Soc. S. Austral.* 16: 374 (1896); Koch, *Trans. & Proc. Roy. Soc. S. Austral.* 22: 114 (1898); Dixon, *Pl. New S. Wales* 232 (1906); Guilfoyle, *Austral. Pl.* 305 (1911); J.M. Black, *Trans. & Proc. Roy. Soc. S. Austral.* 38: 468 (1914); Ewart & Davies, *Fl. N. Territory* 239 (1917); Collins, *Proc. Linn. Soc. New S. Wales* 48: 247 & 252, t. 16 (1923); J.M. Black, *Fl. S. Austral.* 3: 484, t. 200 (1926); C.A. Gardner, *Enum. Pl. Austral. Occid.* 114 (1931); J.M. Black, *Fl. S. Austral.* 2nd edn 4: 737, t. 1038A-C (1957); Chippendale, *Trans. & Proc. Roy. Soc. S. Austral.* 82: 335 (1959); Blackall & Grieve, *W. Austral. Wildfl.* 3: 593 (1965); J.S. Beard, *Descr. Cat. W. Austral. Pl.* 94 (s. dat. (Oct. 1965)); Althofer, *Wildfl. Cradle of Inense* 31, 92 (p.p. included *P. lithospermoides*), 93-97, 155, 159, 162, 165 (1978); Grieve (ed.), Blackall & Grieve, *W. Austral. Wildfl.* 3B: 453 (1981); Haegi, in J. Jessop (ed.), *Fl. Central Austral.* 309 & 310, t. 411 (1981); G.M. Cunningham et al., *Pl. W. New S. Wales* 580 (1981[1982]); Rotherham et al., *Flowers & Pl. New S. Wales & S. Queensland* 151 (1982). *Lectotype* (here chosen): *Mueller* s.n., -.x.1851, 'In alveis fluviorum glareosis siccis et in montibus petraeis prope Cudnaka', South Australia (lecto: MEL 43674 - upper left specimen; *isolecto*: MEL 43674 [excluding lectotype]; *probable isolecto*: 'In clivis rupestribus montium Flindersii prope Wullendunga et Cudnjaka', South Australia - MEL 43673).

Erect shrub, (0.2-)0.5-2 m high. *Branches* ± terete, usually with two faint 'lateral' grooves, very sparsely to sparsely hairy, particularly in grooves and at nodes (from leaf axil region to the next more distal nodal region between the opposite leaf bases) [up to c. 40 hairs/mm<sup>2</sup>] or glabrous, hairs (when present) straight to ± curled, subpatent to antrorse, 0.1-0.2 mm long, very sparsely to sparsely glandular [up to c. 20 glands/mm<sup>2</sup>]. *Leaves* light to dark green, usually dull, glabrous, rarely with an occasional hair, moderately glandular [30-40 glands/mm<sup>2</sup>]; *petiole* absent or up to c. 1 mm long; *lamina* narrowly ovate to narrowly elliptic, rarely very narrowly elliptic, (4-)8-30(-38) × (1.5-)2-8(-10) mm [length to width ratio (2-)3.4-5.5(-11), length of maximum width from base to total lamina length ratio 0.4-0.5], base acute to subattenuate, often subdecurrent, margin entire, apex acute to obtuse; venation not visible, midrib faint and slightly raised on

abaxial surface. *Inflorescence* a frondose to frondo-subbracteose racemiform conflorescence, conflorescences sometimes arranged into a superconflorescence, uniflorescence monadic; 4- c. 12-flowered [per conflorescence]. *Pedicel* 1.3-2.3 mm long, glabrous, glands absent or moderately glandular [c. 40-50 glands/mm<sup>2</sup>] (especially when in bud); *prophylls* usually inserted on distal third of pedicel [a<sub>1</sub> axis to anthopodium ratio (0.8-)<sup>3</sup>-8], opposite, narrowly ovate or narrowly elliptic to linear, (2.1-)<sup>3</sup>-6 mm long, 0.3-0.9 mm wide [length to width ratio 4.5-11.3, length of maximum width from base to total lamina length ratio 0.3-0.4], glabrous or sometimes with an occasional hair (particularly on margin), glands absent, base acute to attenuate, margin entire, apex acute to attenuate. *Calyx* light green, usually with faint purple tinge adaxially, glabrous, glands absent; *tube* 2.5-3.4 mm long; *abaxial lobe* very broadly to broadly ovate, 2.5-3.9 mm long, 2.3-3.9 mm wide [length to width ratio 0.9-1.1], apex obtuse; *adaxial lobe* broadly ovate to ovate, 4.6-6.6 mm long, 3-5.2 mm wide [length to width ratio 1.2-1.5], apex obtuse; [adaxial lobe length to abaxial lobe length ratio 1.1-1.4]. *Corolla* 10-17 mm long, white, inner adaxial and lateral surfaces of tube with purple lines present, inner abaxial surface of tube white with dull orange to yellow dots present (yellow-orange lines often present also), outer surface glabrous basally, sparsely to moderately hairy on lobes and distal part of tube [up to c. 32 hairs/mm<sup>2</sup>], hairs 0.1-0.2 mm long, sparsely glandular [up to c. 20 glands/mm<sup>2</sup>]; inner surface glabrous in tube and sparsely hairy on lobes [c. 20 hairs/mm<sup>2</sup>], glands scattered; *tube* 10.3-11.4 mm long, diameter at mouth 5-6 mm; *abaxial median lobe* spatulate, 6.5-9.8 mm long, 8.5-9.1 mm wide [length to width ratio 0.8-1], apex slightly irregular and rounded, usually retuse (sinus c. 1 mm long); *lateral lobes* broadly elliptic to elliptic or broadly oblong, 5.2-8.5 mm long, 4.6-5.6 mm wide [length to width ratio 1.2-1.8], apex obtuse to subrounded; *adaxial median lobe-pair* depressed to very broadly ovate, 5.5-10.4 mm long, 8.5-13.8 mm wide [length to width ratio 0.5-1.1], apex rounded and deeply bilobed (sinus 3-4.6 mm long). *Stamens* inserted 3.3-3.7 mm above base of corolla; filaments 3-5.2 mm long, glabrous; anthers 1-1.3 mm long, lobes with small basal acumen c. 0.2 mm long, not cristate, connective extended to form a basal appendage 2.3-2.9 mm long, terminating in 1-3 narrowly triangular trichomes. *Disc* 0.5-0.6 mm high. *Pistil* 10.7-13 mm long; *ovary* = cylindrical to cupiform, c. 0.5 mm long, diameter at base c. 0.5 mm, lobes c. 0.1 mm long, densely glandular distally; style 10-11 mm long; *stigma lobes* 0.2-0.6 mm long. *Fruiting calyx* enlarged (abaxial lobe 10-12 mm long, 9-10 mm wide [length to width ratio 1-1.2]; adaxial lobe 4.3-5 mm long, 5.8-6 mm wide [length to width ratio c. 0.8]); [adaxial lobe length to abaxial lobe length ratio 2.2-2.3]. *Mericarps* 2-2.5 mm long, distally 1.2-1.4 mm extended beyond base of style, distal diameter 2.6-3 mm, moderately glandular distally; seeds = ellipsoid, 1.4-1.5 mm long, c. 0.8 mm wide. Figure 9.

*Selected specimens examined* (c. 450 examined), NEW SOUTH WALES: North Western Plains: *Moore* 5690, 22.viii.1970, 'Tundalya', c. 25 miles SE of Louth (CANB, NSW); *Curran* 6, anno 1886, Cobar (MEL). - North Far Western Plains: *Althofer* 11, 23.ix.1949, near White Cliffs (NSW); *De Nardi* 845, 28.ix.1971, 2 km W. of Big Wallaby Tank (NSW). - South Western Plains: *G. Cunningham* s.n., -ix.1972, c. 1.6 km N of Tallebung (AD); *De Nardi* 1102, 24.x.1972, 'Melton Grove', c. 60 km SW of Ivanhoe (NSW).

NORTHERN TERRITORY: Central North: *Beauglehole* (& *Errey*) 57937, 4.xii.1978, Hann Range (MEL); *Ising* s.n., -viii.1973, MacDonald Downs Homestead (AD); *Winkworth* 538, 1.viii.1954, 10 miles NE of Woodygreen Homestead (BRI, CANB). - Central South: *Chinnock* 480, 24.viii.1973, Mt Olga (AD, MEL); *Chippendale* 97, 29.vii.1954, Billygoat Hill, Alice Springs (AD, BRI, CANB, MEL, NSW, PERTH); *Maconochie* 2486, 27.viii.1980, King's Canyon, George Gill Range (AD); *Munir* 5078, 20.viii.1975, Mt Cavenagh (AD, MEL).

SOUTH AUSTRALIA: Northern Arid: Northern Uplands and Alluvial Plains (Mt Davies): *Weber* 221, 30.x.1966, Mt Davies Road (AD); (Musgrave): *George* 5189, 20.vii.1963, 27 miles W. of Musgrave Park Homestead (PERTH); Western Sandplains (Sundown): *George* 5149, 20.vii.1963, Cave Hill (AD, NSW); (Illbillee): *Cornwall* 180, 3.vi.1972, Everard Park Homestead (AD); (Mt Sir Thomas): *Forde* 1478, 19.x.1960, Mt Wooltarlinna (CANB); Central Tablelands (Mt Margaret): *Andrews* s.n., 10.x.1968, Nilpinna Station (AD); (Maree): *Eichler* 12975, 25.ix.1965, near Padsey's Springs



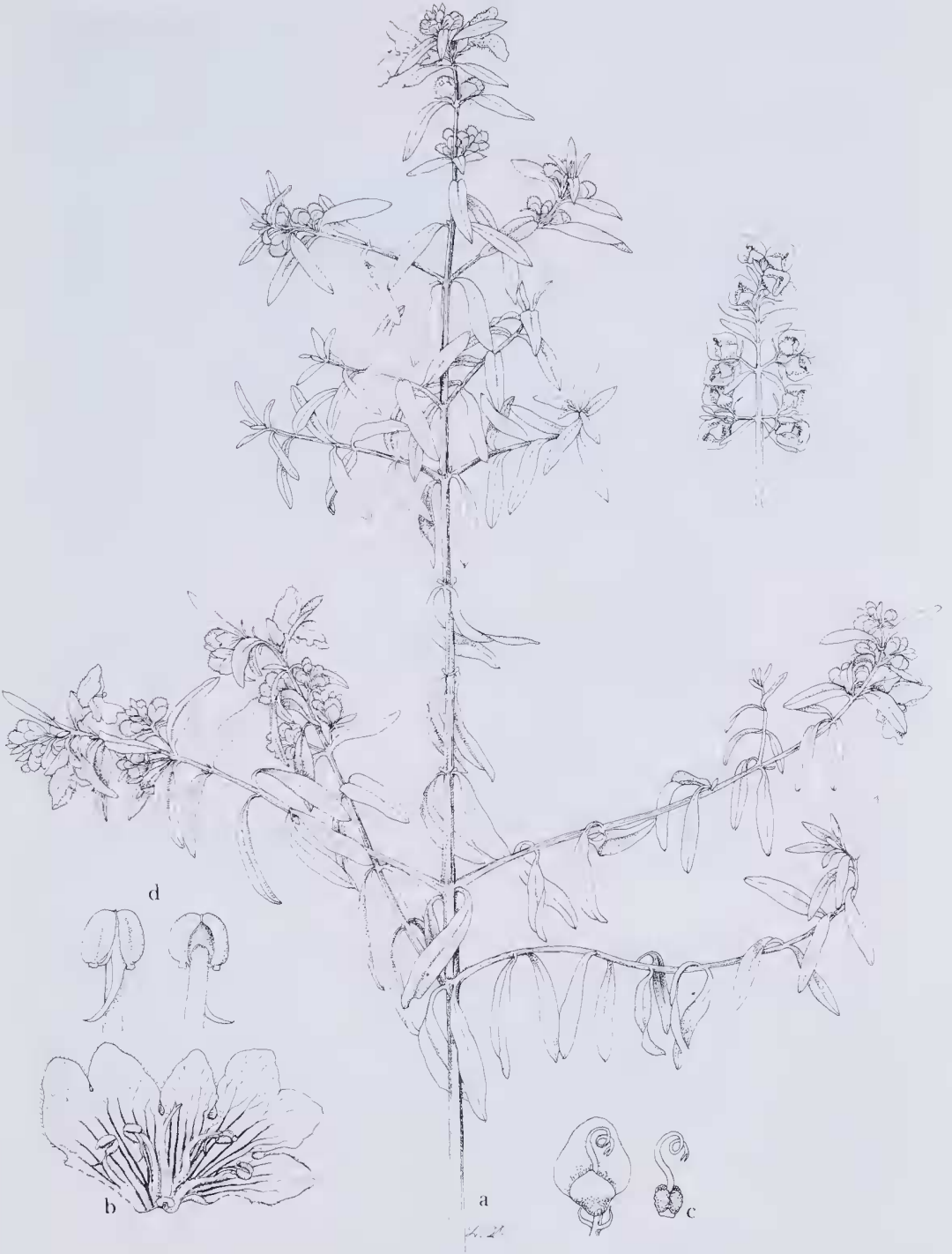


Figure 9. a-d - *Prostanthera striatiflora*. a - Twig and flowers. b - Open corolla. c - Calyx and gynoecium. d - Stamens, ventral and dorsal views (Carrick 2967).

Homestead (AD): (Breakaway): *Forde* 1004, 26.ix.1960, 16 miles N of Wintinna Homestead (CANB). - Western Pastoral: Central Salt Lakes and Plateaux (Chitaminga): *Lay* 157, 21.xi.1970, c. 50 km SSE of Kingoonya (AD); (Woomera): *Martin* s.n., -viii.1954, near Woomera (NSW 128304); (Andamooka): *Murray* s.n., 9.vii.1927, Acacia Creek, South Gap (AD); (Acraman): *Symon* 8165, 5.x.1972, 2 km N of Chinaman Well (AD); Gawler Uplands (Gawler): *Conn* 673, 8.ix.1979, Miccollo Hill (MEL); (Pine Lodge): *Wilson* 496, 15.x.1958, hill N of Pine Hill Lodge (AD, UC); (Iron Knob): *Copley* 2304, 12.x.1968, Corinna Hill (AD). - Flinders Ranges: Northern Complex (Warraweena): *Ising* 466, s. dat., Moolooloo (AD); (Balcanoona): *Eichler* 19654, 26.x.1967, Balcanoona (AD, MEL); (Outouie): *Norris* s.n., 28.ix.1981, Chambers Gorge (MEL); (Erragoona): *Whibley* 4104, 13.ix.1973, Moro Gorge (AD); (Gammon): *Conrick* AD 69, 28.x.1956, Sliding Rock Mine (AD); (Barilla): *Gandoger* s.n., 8.vii.1980, Terrapinna Waterhole (MEL); Southern Basin and Ranges (Wirrealpa): *Cooper* s.n., 30.ix.1942, Grindstone Range (AD); (Wilpena): *Filson* 3484, 8.x.1960, Tea Cosy Creek Gorge (AD, MEL); (Oraparinna): *Weber* 2691, 20.ix.1971, Banyeroo Valley (AD, MEL); (Brachina): *Kuchel* 1041, 24.viii.1963, Mt Aleck (AD); (Merna Mora): *Hill* 331, 2.viii.1955, near Hookina (AD); (Buckalowie): *Cleland* 141, 3.xii.1930, N of Baratta (K); (Buckaringa): *Symon* 8531, 24.iv.1973, Mt Brown (AD); (Willochra): *Cooper* s.n., 24.ix.1961, Gordon (AD). - Eastern Pastoral: Olary Spur (Bimbowrie): *Kuchel* 3096, 26.viii.1972, Cathedral Rock (AD, MEL); (Koonamore): *Partridge* 5, 21.ix.1928, Bumbumie Springs (AD, CANB); (Tiverton): *Carrick* 2135, 14.xi.1968, Cronje Hill (AD, MEL); (Terowie): *Rogers* 1813, 18.ix.1969, Oodla Wirra (AD). - Eyre and Yorke Peninsulas: Northern Myall Plains (Lake Gilles): *Burkett* s.n., anno 1869, Lake Gilles (K); (Buckleboo): *Chinnock* (& *Copley*) 1856, 1857, 7.ix.1974, Corunna Hill South (AD); Central Mallee and Dunes (Kyancutta): *Johns* 3700, 28.x.1935, Wudinna (AD); Gulf Plains (Kallora): *Menzel* s.n., -xi.1896, Port Wakefield (AD).

WESTERN AUSTRALIA: Eremaean (Giles): *Chinnock* 550, 27.viii.1973, Glen Cummin Gorge (AD, MEL); *Forde* 1427, 17.x.1960, 31 miles NW of Mt Squires (CANB); *George* 5290, 22.vii.1963, Winburn Rock (KP, PERTH); *Johnson* 5112, 23.ix.1958, 30 miles N of Blackstone Ranges (PERTH).

*Distribution.* Occurs in New South Wales, the Northern Territory, South Australia and Western Australia. Figure 14.

*Ecology.* Commonly occurs in skeletal soils of rocky areas (either on hill slopes, in crevices of steep rock faces or frequently along drainage lines and in creek beds). The rock type is usually porphyric rhyodacite (Gawler Rangers) or granite. *Lazarides* 6073 records it growing on limestone (The Garden Station, Northern Territory) and *Copley* 2304, *Maconochie* 1902 and *De Nardi* 1102 record it on sandstone (Corunna Hill, South Australia; Longs Range, Northern Territory; 'Melton Grove', New South Wales, respectively).

This species usually occurs in open woodland communities associated with various *Acacia* spp. (e.g. *A. aneura*, *A. montana*, *A. sowdenii*, *A. tarculensis*, *A. victoriae*), *Callitris* sp., *Cassia* spp., *Eremophila* spp., *Eucalyptus intertexta*, *Ficus platypoda*, *Ptilotus obovatus*, *Sida virgata* and *Triodia spicata*.

*Notes.* This species is characterized by having a white corolla which has purple striations on its inner surface (similar to *P. sericea*, *P. campbellii*, and *P. althoferi*), a relatively long anther appendage (2.3-2.9 mm long), very sparsely hairy branches and leaves which usually appear to be glabrous. A few specimens (e.g. *Perry* 5458) are slightly more densely hairy. The floral features of this species are very similar to those of *P. nudula*. This species appears to have affinities with *P. albiflora*, *P. magnifica* and possibly with *P. nudula*.

Although Bentham (1870) and Bailey (1883, 1901 & 1913) recorded this species for Queensland, it appears that they were referring to a variant of *P. lithospermoides*.

*M. Schneider* s.n., -vii.1968 (AD 97033064) records this species from 'West Kimberley, Derby District'. This is assumed to be possibly an incorrect locality.

Prostanthera Hill (Western Australia: Lat.: 25° 39' S, Long.: 128° 11' E) is presumably named after this species. *Johnson* 5112 (PERTH) may have been collected there ('30 miles N of Blackstone Ranges').

A small-leaved variant (leaves 3-8 mm long, 1.2-2 mm wide [length to width ratio 2.5-4]) occurs in the Docker River/Petermann Range area of the Northern Territory and in the adjacent Schwerin Mural Crescent of Western Australia. It is slightly more glandular and hairier than the more common larger-leaved variant. The taxonomic status of the former is not known.

*Specimens examined (of small-leaved variant)*. NORTHERN TERRITORY: south-western Central South: *Beaglehole* (& *Errey*) 60795, 22.ix.1978, S side of Petermann Ranges (MEL); *Carolin* 5290, 18.viii.1966, Mt Phillips (SYD); *Latz* 862, 28.x.1970, Hull River (AD); *Latz* 8064, 12.ix.1978, 6 km SE of Docker River Settlement (MEL).

WESTERN AUSTRALIA: Eremaean (Giles): *Maconochie* 818, 23.ix.1969, Gill Pinacle, Schwerin Mural Crescent (AD, MEL).

*Conservation status*. This species is not considered to be at risk, although it is sometimes locally rare. It usually forms relatively large populations.

*Common names*. Jockey's cap (Cunningham et al. 1982, p. 580), streak-flowered Mint Bush (Guilfoyle 1910, p. 305), striped mintbush (Rotherham et al. 1982, p. 151) and striated mintbush (as cited in Cunningham et al. 1982, p. 580). The creation of another common name for this species, by Cunningham et al. (1982), has further confused the vernacular nomenclature of this species.

One Aboriginal name (Dieyerie dialect) for this species is 'Yulpoo' (*Koch* 28).

## 20. *Prostanthera albiflora* Conn, sp. nov. (Figure 10e-g)

Species nova Sectionis *Prostantherae*. *Frutices* 0.5-2 m. alti. *Rami* et *ramuli* subquadrangulares usque plus minusve teretes, striati, pilis sparsis usque moderatis vestita, pilis 0.2-0.4 mm longis, glandibus sparsis vestita. *Folia* diluta viridia; *petiolus* 0.5-1.6 mm longus, pilis sparsissimis usque moderatis vestita, glandibus moderatis vestita; *lamina* anguste ovata usque anguste elliptica, 5-18 mm longa, 3-6 mm lata, basi plerumque attenuata vel raro rotundata, margine integro, interdum incisuris, apice acuto usque obtuso, raro rotundato, glabra vel pilis dispersis vestita. *Pedicellus florum* 1.6-3.1 mm longus, pilis sparsissimis usque moderatis vestita, pilis circa 0.2 mm longis, glandibus moderatis vestita; *prophyllis* in dimidio distali pedicello affixis, anguste ellipticis usque anguste obovatis, 2.2-3.4 mm longis, 0.4-0.8 mm latis. *Calyx* dilutis viridis, pilis moderatis usque densis vestita, glandibus sparsissimis usque sparsis vestita; *tubus* 3-5 mm longus; *lobus abaxialis* latissime ovatus, 2.2-3.8 mm longus, 3.1-4.9 mm latus, apice obtuso usque rotundato, interdum emarginato; *lobus adaxialis* latissime ovatus usque late ovatus, 4.6-13 mm longus, 3.9-12.2 mm latus, apice obtuso usque rotundato. *Corolla* 15-22 mm longa, alba, maculae faucis dilutae caeruleae, extra pilis sparsis usque moderatis vestita, glandibus sparsissimis usque sparsis vestita, interius glabra vel pilis sparsissimis usque sparsis vestita, glandibus absentibus; *tubus* 11-16 mm longus; *lobus abaxiali-medianus* plus minusve spathulatus, 6-7.2 mm longus, 6-9 mm latus, apice leviter irregulari et rotundato, *lobis lateralibus* latissime ovatis usque ellipticis, 5-5.9 mm longis, 4.2-5 mm latis, apice obtuso usque rotundato, *pari loborum adaxiali-mediano* depresso ovato usque latissime ovato, 7.5-9.8 mm longo, circa 13 mm lato, apice leviter irregulari et rotundato, bilobata, sinu circa 3 mm longo. *Stamina* 8-9 mm e basi corollae affixa; filamenta 5-7.3 mm longa; antherae 1.4-1.8 mm longae, appendice 2.3-2.5 mm longa. *Pistillum* 18-20 mm longum; ovarium 0.5-0.6 mm longum, glandibus densis vestita, pilis sparsis vestita distaliter; stylus circa 19 mm longus; lobis stigmatis 0.6-0.7 mm longis. *Calyx fructus* auctus. *Mericarpia* non visus.

*Typus*: *Weber* 4826, 26.ix.1975, W of road between Agnew and Wiluna, c. 8 km N of Yakabindie Homestead, Violet Range, Western Australia (holo: MEL 1531780; iso: AD 97626262, BRI, CANB, E, K, MEL 1531781, MO, NSW, PERTH, S, UC).



Erect spreading shrub, 0.5-2 m high. *Branches* subquadrangular to ± terete, striate, sparsely to moderately hairy [10-58.3 hairs/mm<sup>2</sup>], hairs curved to curled, sometimes almost straight, usually antrorse. 0.2-0.4 mm long, occasional multicelled hairs present at nodes (c. 0.6 mm long); sparsely glandular [14-20 glands/mm<sup>2</sup>]. *Leaves* light green; *petiole* 0.5-1.6 mm long, with an occasional hair or sparsely to moderately hairy [25-80 hairs/mm<sup>2</sup>], moderately glandular [50-67 glands/mm<sup>2</sup>]; *lamina* narrowly ovate to narrowly elliptic, sometimes circular to elliptic, 5-18 × 3-6 mm [length to width ratio (1.1-) 1.8-3.8, length of maximum width from base to total lamina length ratio 0.4-0.6], base attenuate and often shortly decurrent, rarely rounded, margin entire, sometimes with 1 or 2 small notches, apex acute to obtuse, rarely rounded; venation faint to indistinct, midrib raised on abaxial surface, slightly sunken on adaxial surface, glabrous or with a few hairs on midrib and/or margin, moderately to densely glandular [65-77 glands/mm<sup>2</sup>]. *Inflorescence* a frondose racemiform confluence, uniflorescence monadic; 2-12(-16)-flowered [per confluence]. *Pedicel* 1.6-3.1 mm long, very sparsely to moderately hairy [up to 40 hairs/mm<sup>2</sup>]; hairs c. 0.2 mm long; moderately glandular [60-73 glands/mm<sup>2</sup>]; *prophylls* inserted on distal half of pedicel [a<sub>1</sub> axis to anthopodium ratio 1.5-5], opposite, narrowly elliptic to narrowly obovate, 2.2-3.4 mm long, 0.4-0.8 mm wide [length to width ratio 3.5-8.5, length of maximum width from base to total lamina length ratio 0.6-0.9], base attenuate, margin entire, apex acute to obtuse, glabrous or with occasional hairs. *Calyx* light green; outer surface moderately to densely hairy [50-150 hairs/mm<sup>2</sup>], tube often more densely hairy than lobes, sparsely glandular [6-26.7 glands/mm<sup>2</sup>]; inner surface moderately to densely hairy [77-96.7 hairs/mm<sup>2</sup>], very sparsely to sparsely glandular [8.3-11.7 glands/mm<sup>2</sup>]; *tube* 3-5 mm long; *abaxial lobe* very broadly ovate, 2.2-3.8 mm long, 3.1-4.9 mm wide [length to width ratio 0.8-1], apex obtuse to rounded, sometimes emarginate (sinus up to c. 0.8 mm long); *adaxial lobe* very broadly to broadly ovate, 4.6-13 mm long, 3.9-12.2 mm wide [length to width ratio 0.8-1.3], apex obtuse to rounded; [adaxial lobe length to abaxial lobe length ratio 1.5-4]. *Corolla* 15-22 mm long, white, with pale blue spots in throat (*Blockley* 426); outer surface sparsely to moderately hairy [27-78 hairs/mm<sup>2</sup>], very sparsely to sparsely glandular [up to c. 10 glands/mm<sup>2</sup>]; inner surface glabrous or very sparsely to sparsely hairy in mouth and base of lobes [up to c. 20 hairs/mm<sup>2</sup>], glands absent; *tube* 11-16 mm long, diameter at mouth c. 5-6 mm; *abaxial median lobe* ± spatulate, 6-7.2 mm long, 6-9 mm wide [length to width ratio 0.8-1], apex slightly irregular and rounded, often broadly retuse (sinus c. 1 mm long); *lateral lobes* broadly ovate to elliptic, 5-5.9 mm long, 4.2-5 mm wide [length to width ratio 1-1.4], apex obtuse to rounded; *adaxial median lobe-pair* depressed to very broadly ovate, 7.5-9.8 mm long, c. 13 mm wide [length to width ratio 0.6-0.8], apex slightly irregular and rounded, bilobed (sinus c. 3 mm long). *Stamens* inserted 8-9 mm above base of corolla; filaments 5-7.3 mm long, glabrous; anthers 1.4-1.8 mm long, not cristate, lobes with small basal acumen c. 0.2 mm long, connective extended to form a basal appendage 2.3-2.5 mm long, terminating in 5-10 narrowly triangular trichomes. *Disc* c. 0.8 mm high. *Pistil* 18-20 mm long; *ovary* ellipsoid, 0.5-0.6 mm long, diameter at base 0.7-0.9 mm, densely glandular, lobes 0.1-0.2 mm long, sparsely hairy distally; *style* c. 19 mm long; *stigma lobes* 0.6-0.7 mm long. *Fruiting calyx* enlarged (abaxial lobe 5-6 mm long, 5.5-6 mm wide [length to width ratio 0.8-1.1]; adaxial lobe 12-13 mm long, 11-11.5 mm wide [length to width ratio 1-1.1]; [adaxial lobe length to abaxial lobe length ratio 2-2.4]). *Mature mericarps* not seen; immature mericarps moderately hairy distally, densely glandular.

*Specimens examined*. WESTERN AUSTRALIA: Eremaean (Fortescue): *Beard* 2880, 18.viii.1963, Wittenoom Gorge (KP, PERTH); *Blockley* 16, 14.ix.1965, Duck Creek, Juna Downs Station (KP, PERTH); *Blockley* 426, 16.ix.1966, E from Mt Bruce Homestead (KP); *Carr* 4943, 10.viii.1974, Hancock Gorge, Hamersley Range National Park (AD, MEL, RSA); *Fairall & Lullfitz* L.2739, 22.x.1963, Diamond Drillers Hill, Wittenoom (KP); (Carnarvon): *Gardner* 6072, 23.ix.1941, Kennedy Range (PERTH); (Ashburton): *Wittwer* S. 1765, .ix.1971, Mt Augustus Homestead (KP); (Austin): *Barnes* WA 17489, anno 1968, N of Lake Ballard (Perth); *Frazer* s.n., anno 1919, between Kunnunoppin & Mt Marshall and Lake Barlee (NSW); *Gardner* 13430, 3.ix.1961, 150 km SE of Meekatharra (PERTH); *King* s.n., anno 1886, near Lake Austin (MEL);



Figure 10. a-d - *Prostanthera magnifica*. a - Twig and flowers. b - Open corolla. c - Calyx and gynoecium, with abaxial calyx lobe removed. d - Stamens, ventral and dorsal views (Ashby 1913). e-g - *P. albiflora*. e - Twig and flowers. f - Calyx and prophylls. g - Stamens, dorsal view (Weber 4826).

*Lullfitz* L.2404, 8.ix.1963, 43 km N of Sandstone (PERTH); *Sewell* s.n., anno 1890, Murchison River (MEL); *Speck* 1502, 2.x.1958, near Meekatharra (AD, CANB, MEL, NSW, PERTH); *Weber* 4827, 26.ix.1975, c. 8 km N of Yakabindie Homestead (AD, BM, HO, MEL, NSW, PERTH - same locality as Type).

*Distribution.* Endemic to the Eremaean Botanical Province (Austin, Carnarvon & Fortescue Districts) of Western Australia. Figure 14.

*Ecology.* Occurs along watercourses in sandy loam or ironstone-rich soils.

*Notes.* *P. albiflora* has strong affinities with *P. magnifica*. It differs from the latter by having a white corolla (*P. magnifica* has a pale mauve, pale blue to pink corolla), a yellowish green calyx which is hairy on the outer surface (*P. magnifica* has a dark mauve to purple calyx which is glabrous on the outer surface), prophylls 2.2-3.4 mm long (*P. magnifica* has prophylls (4.5-)6-13 mm long), and the anthers are not cristate (in *P. magnifica* the anthers are cristate).

*Morse* 173 (CBG 8503963) collected from 'Top of Durba Hills, Keartland district', appears to be a small-flowered form of this species.

*Conservation status.* Not known.

21. ***Prostanthera magnifica*** C.A. Gardner, J. Roy. Soc. W. Austral. 27: 196 (1942); Blackall & Grieve, W. Austral. Wildfl. 3: 595 (1965); J.S. Beard, Descr. Cat. W. Austral. Pl. 94 (s. dat. [Oct. 1965]); Althofer, Cradle of Incense 79, 154, 156, 157 & 159 (1978); Grieve (ed.), Blackall & Grieve, W. Austral. Wildfl. 3B: 455 (1981); C.A. Gardner, Wildfl. W. Austral. 14th edn 122 (1981). - *Lectotype* (here chosen): *Blackall* 2783, -.ix.-[early 1900's], 20 miles from Mullewa towards Morawa, Western Australia (lecto: PERTH; isolecto: MEL 667920, PERTH).

*P. magnifica* var. *asperata* C.A. Gardner, J. Roy. Soc. W. Austral. 27: 196 (1942); Blackall & Grieve, W. Austral. Wildfl. 3: 595 (1965); Althofer, Cradle of Incense 154 (1978); Grieve (ed.), Blackall & Grieve, W. Austral. Wildfl. 3B: 455 (1981). - *Lectotype* (here chosen): *Blackall* 3458, -.ix. [13.x.], 1937, 'Top of Mt Churchman' [handwritten on small tag in Blackall's hand], '*Prostanthera magnifica* C.A. Gardner var.' [in Gardner's hand], Western Australia (lecto: PERTH, fragment in K (n.v.); isolecto: PERTH - 3 sheets) [refer Typification].

Slender to spreading erect shrub, 0.4-2.5 m high. *Branches* ± terete, slightly flattened laterally and/or ridged, sparsely to moderately hairy, rarely glabrescent [(c. 5-)25-90 hairs/mm<sup>2</sup>]; hairs sometimes restricted to internodal surface from within leaf axils to the next node (between bases of leaves), often only base of hair persistent, curled to ± straight, antrorse, up to 0.3 mm long; very sparsely glandular [up to c. 10 glands/mm<sup>2</sup>]. *Leaves* green, with an occasional hair to very sparsely hairy [up to c. 10 hairs/mm<sup>2</sup>], indumentum denser or restricted to petiole, midrib and margin, [hairs as for branches], with an occasional gland to very sparsely glandular [up to c. 17 glands/mm<sup>2</sup>]; *petiole* 1-4(-6) mm long; *lamina* elliptic to narrowly elliptic, sometimes narrowly ovate, rarely narrowly obovate, ([? immature] 6-)15-44 × ([? immature] 2-)5-10(-16) mm [length to width ratio 2.2-4.6, length of maximum width from base to total lamina length ratio 0.3-0.5(-0.7)], base attenuate to acute, margin often slightly irregular, entire or sometimes with an occasional tooth (teeth 1-1.5 mm long), appearing denticulate because of scattered hairs and/or hair bases, apex acute to rounded, often with a small mucro c. 0.3-0.5 mm long; venation faint to indistinct; midrib raised on basal portion of abaxial surface, ± level with adaxial surface; [petiole length to lamina length ratio up to 0.4]. *Inflor-escence* a frondose racemiform conflorescence (leaves of conflorescence smaller than vegetative leaves), uniflorescence monadic; 6-18-flowered [per conflorescence]. *Pedice*l 2.5-6 mm long, glabrous or very sparsely hairy [up to c. 5 hairs/mm<sup>2</sup>], hairs 0.1-0.3 mm long, very sparsely to moderately glandular [(less than 10)10-67 glands/mm<sup>2</sup>], glands rarely absent; *prophylls* inserted near base of calyx (a<sub>1</sub> axis to anthopodium ratio 0.1-0.3), opposite, narrowly ovate, often curved, flat, (4.5-)6-13 mm long, (0.5-)0.6-1.4(-2.6) mm wide [length to width ratio 4-9.5, length of maximum width from base to total lamina length ratio 0.2-0.3], glabrous or sometimes with an occasional hair basally, base attenuate (rarely obtuse), margin entire, apex attenuate. *Calyx* dark mauve to purple;



outer surface glabrous; inner surface sparsely to moderately hairy basally [c. 20-42 hairs/mm<sup>2</sup>], hairs c. 0.1 mm long, glabrous distally, very sparsely glandular [c. 5-12 glands/mm<sup>2</sup>]; *tube* 2-4 mm long; *abaxial lobe* broadly ovate to ovate, 4-10 mm long, 4-8 mm wide [length to width ratio 1-1.5], apex obtuse; *adaxial lobe* very broadly ovate to ovate, 15-26 mm long, 10-23 mm wide [length to width ratio 1-1.8], apex obtuse to rounded; [adaxial lobe length to abaxial lobe length ratio 2.2-3.1]. *Corolla* 16-25(-30) mm long, pale mauve (lilac), pale blue to pink, inner abaxial surface of tube and base of abaxial median lobe with dark purple spots; outer surface glabrous at base, otherwise moderately hairy [30-37 hairs/mm<sup>2</sup>], very sparsely glandular [up to c. 10 glands/mm<sup>2</sup>]; inner surface glabrous basally, distally moderately to densely hairy [30- c. 100 hairs/mm<sup>2</sup>], glands absent or with an occasional gland present; *tube* 15-20 mm long, diameter at mouth 8-10 mm; *abaxial median lobe* very broadly obovate to obovate, or subspathulate, 3.9-7.4 mm long, 2.6-7.2 mm wide [length to width ratio 1-1.8], apex often slightly irregular, rounded or often subtruncate, sometimes asymmetrical; *lateral lobes* very broadly ovate to ovate, or broadly subangular-ovate, 3.9-6 mm long, 2.2-5.6 mm wide [length to width ratio 0.9-1.8], apex obtuse; *adaxial median lobe-pair* perdeepressed to very broadly ovate, 3.9-8 mm long, 5-24.7 mm wide [length to width ratio 0.3-0.7], apex rounded, emarginate to bilobed (sinus 1-2.2 mm long). *Stamens* inserted 7.2-8.5 mm above base of corolla; filaments 7.8-9.1 mm long, glabrous or with a few scattered hairs (hairs c. 0.2 mm long); anthers 1.8-2.5 mm long, usually cristate dorsally, lobes with small basal acumen c. 0.3 mm long, connective extended to form a basal appendage 2-5 mm long, terminating in up to c. 5 narrowly triangular trichomes. *Disc* 0.4-0.5 mm high. *Pistil* 20-24 mm long; *ovary* ± cylindrical-obovoid, 0.7- c. 1 mm long, diameter at base 0.8-1 mm, lobes c. 0.3 mm long, glabrous, glands absent; *style* 16-22 mm long; *stigma lobes* c. 0.7-1 mm long. *Fruiting calyx* unchanged or slightly enlarged (abaxial lobe 7-12 mm long, 5-8 mm wide [length to width ratio 1-1.8]; adaxial lobe 21-30 mm long, 15-28 mm wide [length to width ratio 1-1.6]; [adaxial lobe length to abaxial lobe length ratio 0.3-0.4]). *Mericarps* 2-3 mm long, distally 1.5 mm extended beyond base of style, distal diameter 2.1-2.6 mm; seeds ± cylindrical, c. 2.5 mm long, 1-1.5 mm wide. Figure 10a-d.

*Selected specimens examined (44 examined)*. WESTERN AUSTRALIA: Eremaean (Austin): *Corrick* 9146, 2.x.1984, 19 km W of Hospital Rocks (HO, MEL, PERTH) *Gardner* 7840, 13.x.1945, Tuckanarra Creek (PERTH); *George* 901, 20.viii.1960, 37 miles S of Paynes Find (PERTH); (Coolgardie): *Conn* 2292, 20.ix.1985, Mt Churchman (MEL); *Davies* 461, -.xi.1964, near Mt Jackson (PERTH). - South-West (Irwin): *Carson* s.n., 15.x.1940, 30 miles E of Ajana (PERTH); *Lipple* s.n., 16.ix.1960, Wonthella (PERTH); (Avon): *Ashby* 1913, 26.viii.1966, Mullewa (AD); *Gardner* 9549, -.viii.1950, Booraan (PERTH).

*Distribution*. Endemic to the Eremaean Botanical Province (Austin & Coolgardie Districts) and South-West Botanical Province (Avon & Irwin Districts) of Western Australia. Figure 14.

*Ecology*. Occurs amongst granitic outcrops and on ironstone hillside areas, in red sands and sandy loam soils, often associated with *Acacia aneura*.

*Typification*. There are four sheets of *Blackall* 3458 (the type of *P. magnifica* var. *asperata*) held at PERTH. Two sheets have only one specimen mounted on each. One of these has 'Prostanthera magnifica C.A. Gardner var.' [in Gardner's hand] written on one of Gardner's 'Type' labels. This latter specimen has been chosen as the lectotype.

*Notes*. The floral features of this species readily distinguish it from other species of *Prostanthera* section *Prostanthera*. The adaxial calyx lobe is very large (15-26 mm long, 10-23 mm wide) and soon becoming purple in flower and fruit. The corolla tube is very long (15-20 mm long) such that the corolla is superficially similar to those species of Section *Klanderia*. The anther appendage is much longer (2-5 mm long) than any of the other Western Australian species of Section *Prostanthera*.

*P. magnifica* var. *asperata* has been reduced to synonymy because it appears to represent a slightly smaller-leaved variant, which also tends to have slightly shorter flowers than the typical variant of this species. However, there is considerable overlap in all features studied such that most specimens can not be confidently classified into either taxon. For example, Corrick 9146 shows considerable variation in leaf size, but all other features suggest that this is a typical specimen of *P. magnifica*. A consideration of climatic factors may explain some of the variation observed because the specimens with smaller leaves tend to occur in the drier regions of the total distribution area.

*Conservation status.* Does not appear to be threatened or endangered.

### Species of Uncertain Status

*Prostanthera canaliculata* F. Muell. var. *canosericea* Benth., Fl. Austral. 5: 102 (1870) (as 'Var. ? *canosericea*'); Althofer, Cradle of Incense 154 (1978); Grieve (ed.), Blackall & Grieve, W. Austral. Wildfl. 3B: 452 (1981) (as 'var. ? *canosericea*'). *Type:* Drummond (4th Collection) 164, s. dat., s. loc., Western Australia (MEL 42997).

*Note.* The status of this taxon is unclear since the Type is inadequate, with only immature fruits present (flowers lacking). This specimen has the small leaves similar to those of *P. canaliculata*, but the whole specimen is very densely hairy (similar to *P. althoferi* ssp. *althoferi* and *P. wilkieana*). *P. canaliculata* has glabrous to very sparsely hairy leaves, pedicels and calyces, even though the stems are usually densely hairy. This taxon could represent a small-leaved variant of *P. althoferi* ssp. *althoferi* or *P. wilkieana*, or a hairy variant of *P. canaliculata*. Until adequate material is available, it is not possible to clarify the taxonomic status of this taxon.

*Specimens examined.* WESTERN AUSTRALIA: Adams s.n., anno 1889, 'Interior of W.A.' (MEL 43803); Crawford 56, anno 1887, 'between Victoria Springs and the W end of the Great Biglt' (MEL 42971); Merrill s.n., anno 1888, Golden Valley (? Mine) (MEL 43869); Moore s.n., anno 1895, 'West Australian goldfields' (NY); Mueller s.n., s. dat. upper Kalgan (MEL 43002).

### Acknowledgements

I sincerely thank the Directors and Curators of the many herbaria who made available loans of herbarium material. I gratefully acknowledge Mrs E.L. Robertson's advice on the type locality of *P. nudula*. Mr K.R. Newbey generously donated, from his private herbarium, the isotype of *Prostanthera verticillaris* to MEL.

The plant illustrations were skilfully done by Mr L. Dutkiewicz (then AD) (Figure 1a-d, 2, 5, 8a-e, 9, 10a-d) and Ms A. Podwyszynski (MEL) (Figure 1e & f, 3, 4, 6, 7, 8F, 10e-g).

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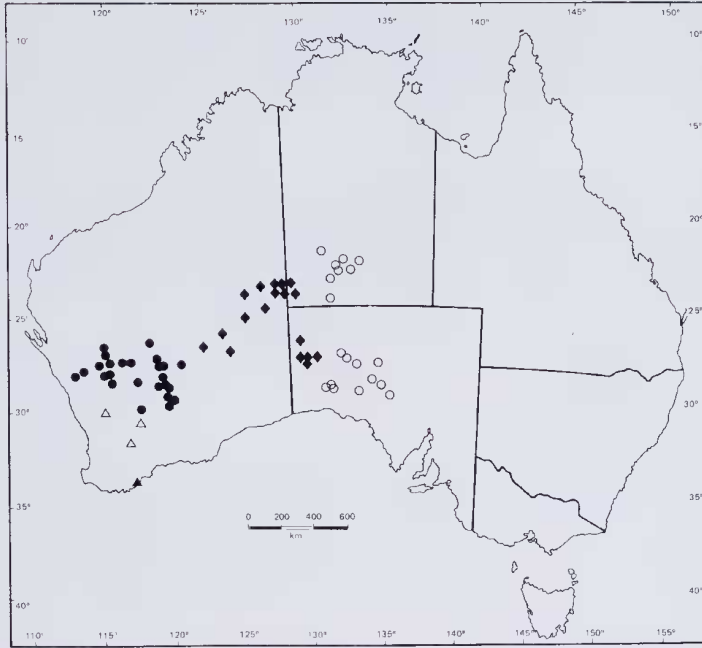


Figure 11. Distribution map of *Prostanthera althoferi* ssp. *althoferi* (dot), *P. althoferi* ssp. *longifolia* (circle), *P. nanophylla* (open triangle), *P. sericea* (solid diamond), *P. verticillaris* (solid triangle).

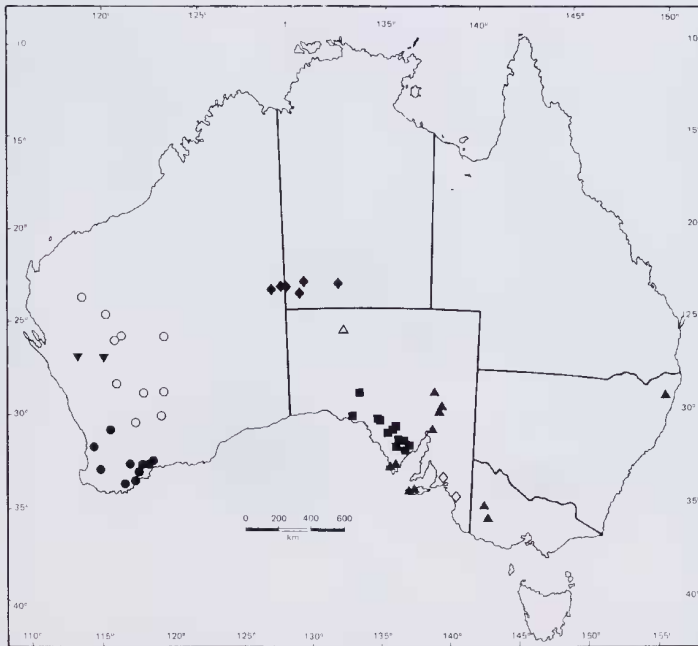


Figure 12. Distribution map of *Prostanthera ammophila* (solid square), *P. campbellii* (circle), *P. canaliculata* (dot), *P. centralis* (solid diamond), *P. eurybioides* (open diamond), *P. nudula* (open triangle), *P. petrophila* (solid inverted triangle), *P. spinosa* (solid triangle).

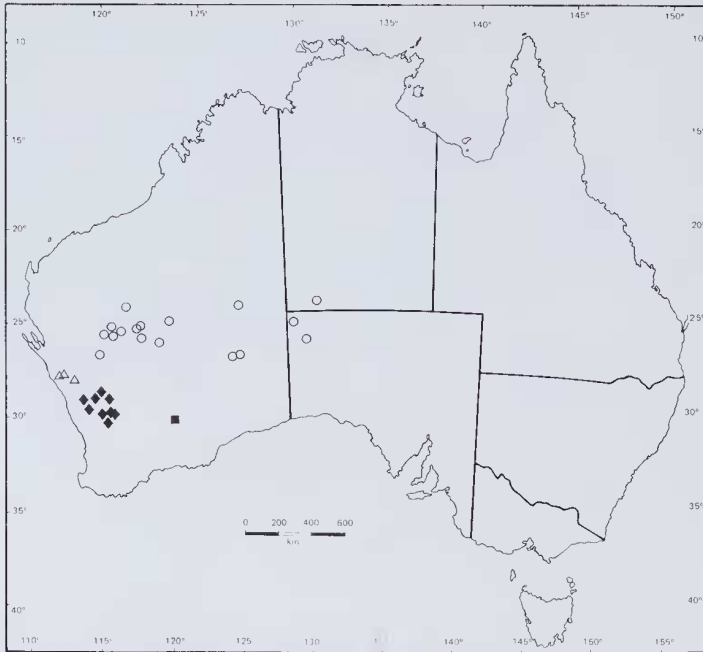


Figure 13. Distribution map of *Prostanthera eckersleyana* (solid diamond), *P. scutata* (open triangle), *P. splendens* (solid square), *P. wilkieana* (circle).

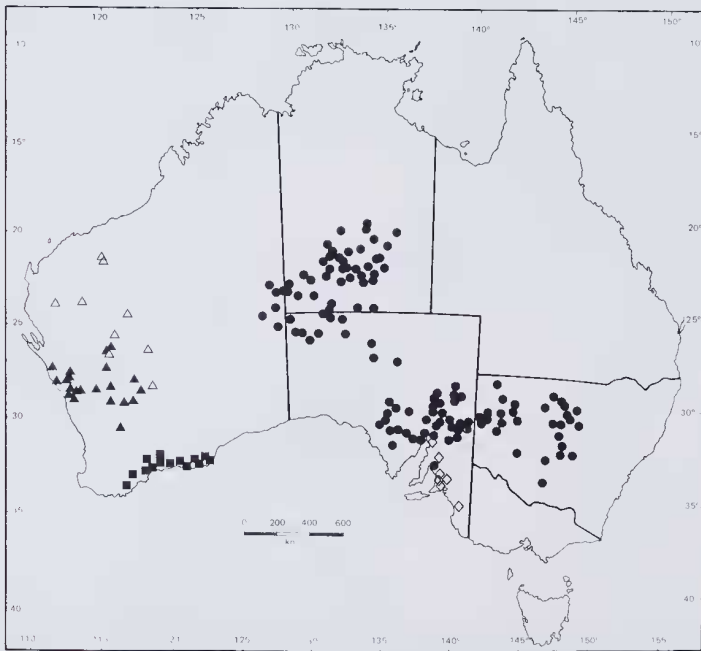


Figure 14. Distribution map of *Prostanthera albiflora* (open triangle), *P. baxteri* (solid square), *P. behriana* (open diamond), *P. magnifica* (solid triangle), *P. striatiflora* (dot).



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Names of new taxa, new combinations, and names with new status appear in bold type, other accepted names and epithets appear in roman, and synonyms in italic. For an accepted name, reference is made only to the page where the main entry begins; for a rejected name, only the page where it is listed as a synonym of an accepted name is indicated.

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